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THE VALUE OF TAKA-DIASTASE IN DIABETES MELLITUS.

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Some one has said that the most effectual way of learning all there is to know about a disease is to have some friend develop symptoms of it.

Many of us know only too well the feeling of helplessness that comes to us when a friend develops such a disease as diabetes mellitus, and many too are aware, in such instances, of the feeling of increased and very personal interest in every statement concerning the disease. At such times we are constantly on the watch for helpful suggestions as to treatment, and although frequently disappointed we always find new hope in each new drug or procedure.

Thus it was with me several months ago when I discovered in a friend the symptoms, and in his urine the undoubted evidence, of diabetes mellitus. It did not take me long to learn that much as the authorities may differ as to the etiology and pathology of the disease, they are unfortunately well agreed that the medicinal treatment of the disease has very narrow limits while the dietary treatment can only be considered as palliative.

As to the medicinal treatment, we find that a very large percentage of the drugs of the Pharmacopœia have been recommended from time to time, while scores of unofficial products are advised; but, as has been pointed out before, the hopefulness of the treatment of any disease is, as a rule, in inverse proportion to the number of drugs used in its treatment.

In a conversation with Dr. Hobart A. Hare upon the treatment of diabetes, he stated that several years ago he had been asked his opinion as to the possible value of taka-diastase in this disease, and had replied that our knowledge of the etiology and pathology of the condition was so slight that it was impossible to speak positively, but that, on theoretical grounds, it would seem probable that the drug would do harm by rendering the starches more easily converted into sugars, and the liver cells being unable to store this flood of material the patient would be made worse. However, in the THERAPEUTIC GAZETTE of April 15, 1910, there appeared a letter from a practitioner who stated that he had used taka-diastase with benefit to his patient. Shortly after reading this letter Dr. Hare administered this drug to several patients in the Jefferson Medical College Hospital with good results, and it was about this time that Dr. Hare requested me to ascertain its value in those diabetic patients who visited the Out-patient Department of the Jefferson Medical College Hospital.

First a word as to what taka-diastase is. The word diastase is applied to certain enzymes or ferments found in the digestive juices of the animal body; diastase is also present in the processes connected with the fermentation of grain, as in the manufacture of alcoholic beverages. Taka-diastase was discovered by a Japanese investigator named Takamine and named "Taka-Dias-

tase." This product is manufactured by Parke, Davis & Co., whose department of experimental medicine was courteous enough to supply me with a liberal amount of this not inexpensive drug for experimental use in the dispensary.

The drug comes in two forms, one the liquid taka-diastase and the other the powder usually dispensed in capsules. It is claimed that this drug will liquefy 150 times its weight of starch in ten minutes under conditions corresponding to those which exist in the stomach during or just following a meal.

All my experience has been with the powdered drug.

The first patient upon whom the drug was tried by me was J. C., an American aged thirty-two years. This patient had known of the presence of the disease for three years, and during this time he had consulted a score of physicians in this country and in Europe.

His urine had been examined frequently during the three years, and the quantity of sugar varied between three and nine per cent, being influenced by his care or lack of care in his diet. For three weeks previous to my seeing this patient he had been unable to leave his home because of intense weakness, and when first seen was suffering all the tortures of a well-marked diabetes mellitus. His appetite could not be satisfied, his thirst was intense, he was sleepless and suffered from intense headache, while diarrhea added to his discomfort. On entering the cottage one perceived the sickening aromatic odor of the patient's breath, and a glance at the emaciated figure revealed the seriousness of the disease. The patient informed me that he had taken all known remedies for the disease and many unknown ones (referring to patent medicines), and that none of them gave him relief, although there had been times when, earlier in the disease, he seemed to improve under any new treatment. He also informed me that he knew he had not long to live, but that he wished to live comfortably while he did, and he asked me to come as often as necessary to give him a hypodermic injection of morphine to relieve his pain and discomfort. I found that he was passing something over 200 ounces of urine in twenty-four hours (with 5 per cent of sugar), and was disturbed at night some eight to twelve times to urinate. He had lost twelve pounds in weight in about three weeks, and was at this time unable to leave his bed. The patient was given a hypodermic injection of morphine and a request made for a specimen of urine from the total quantity in twenty-four hours. I found that the man passed 186 ounces of urine with a specific gravity of 1032, sugar 4.6 per cent, with a large amount of acetone and diacetic acid. The following day the amount was 202 ounces. During both nights the man was compelled to urinate at frequent intervals. The night that he received the morphine he was up for this purpose six times, and the next night eleven times.

Two days after he was first seen the patient was given capsules of taka-diastase containing five grains of the drug, and was directed to take one after each meal and at bedtime. He received no other medicine and was very skeptical as to the possible value of any drug. The family telephoned me during the evening that they were worried lest I had given him too strong a remedy, as he had been suspiciously comfortable all day, had passed urine but twice during the afternoon, and had not complained of thirst or hunger. The next morning the report was that the patient had gone to bed at 10 P.M. and was not disturbed by the desire to urinate until 5 A.M. During the first twenty-four hours following the administration of the taka-diastase the amount of urine decreased from 202 ounces to 130 ounces, and the sugar decreased from 4.6 to 3 per cent. Acetone and diacetic acid were still present, but in much less quantities. The patient stated that he had not been as comfortable in many weeks, and that although his appetite was much less he felt decidedly stronger.

The patient continued to improve from day to day, and ten days after he was

given the drug for the first time he passed but 84 ounces of urine in the twenty-four hours. The amount of sugar was not as much reduced as I had hoped to see, being constantly about 3 per cent. There is this to say, however: the patient was allowed to have a very free choice of food for the reason that he had been kept upon so strict a diet previously that he had lost much weight and strength. From this time the patient gained, and from being bedfast he was able to get about and to a certain extent enjoy himself. The patient gained in weight, slept well, lost his ravenous appetite, no longer had diarrhea, and could attend social functions without the necessity of absenting himself at frequent intervals to visit the urinal. The patient returned to his home at the end of the season in much better health than he had been in two years, and this improvement he ascribes to the taka-diastase.

This man was under my observation for about three months at the seashore, where unfortunately I was not able to carry on as accurate laboratory analyses as was desirable, but as to the general improvement there could be no doubt. At the end of the season, after taking taka-diastase for about three months, the patient was passing less than 80 ounces of urine a day.

The next patient the drug was administered to was A. K., aged thirty-six, suffering from glycosuria, but who had no symptoms of diabetes. He had been refused insurance because of the presence of sugar in his urine, although he at no time had symptoms of the disease. He was found to have a trace of sugar in his urine on several successive days. This amount was increased in quantity if he ate freely of candy or other sweets. By administering taka-diastase in five-grain doses I found that all the sugar disappeared, and although the urine was examined on several occasions after the drug was discontinued no sugar was found. This patient has since been accepted by the insurance company that had previously considered him a poor risk.

The third patient was W. C., an American aged twenty-six, a carpenter by trade. This patient came to the out-patient department for treatment. Up to four months before the man had been perfectly well. The first untoward symptom he had was loss of weight, and shortly after he began to notice that his appetite was enormous, while he could scarcely satisfy his thirst. He had insommia and persistent headache and complained of being very nervous. The first time he consulted me he said that he was up often at night and that he passed far more urine than usual. He was weak and unable to do his work. His urine at this time revealed 4 per cent of sugar, the presence of acetone, but no diacetic acid. This man lived in Clifton Heights and agreed to return to the hospital in a few days for ward treatment. He was given taka-diastase 5 grains four times a day, and returned to the dispensary so free from his former difficulties that he refused to come to the hospital. He has gained six pounds in weight in six weeks and declares that he has no discomfort whatever. His urine at his last visit contained 2 per cent of sugar, but we are unable to find from the man how much he was passing in the twenty-four hours. The man has returned to his work as a carpenter and considers himself well. It is significant, however, that if he does not receive the taka-diastase he soon has a return of his symptoms. This is true of all the patients to whom I have administered the drug.

The next patient was B. K., female, aged forty-two. She consulted the dispensary for relief from an intolerable itching about the genitals. This patient is known to have had diabetes for eight years, having been a patient at the dispensary during that time. Her urine revealed 1.5 sugar, sp. gr. 1024; no acetone, no diacetic acid. The interesting fact was noted that following the administration of taka-diastase the amount of sugar increased to 3 per cent, but the itching stopped immediately. The percentage of sugar in this case was from single specimens and not from a total twenty-four hour amount.

The next patient was R. M., aged sixty

years, white, American. He had been a sufferer from diabetes for at least ten years, and as a rule did not have many troublesome symptoms. He consulted me at the dispensary to get relief from a symptom which he stated had been more or less troublesome from the beginning—that is, frequency of urination, particularly at night. I was unable to ascertain the total quantity in twenty-four hours in this man, but an examination of the specimen passed at noon revealed 2.2 per cent of sugar. The patient refused to enter the hospital, and was given twenty-four capsules of taka-diastase, to be taken one after each meal and at bedtime. He returned after a week stating that after taking the first day's medicine he passed very much less urine and slept through the nights without being disturbed.

If one may summarize from such a small number of cases it seems fair to state that the administration of taka-diastase to a diabetic has a tendency to alleviate all the symptoms; it decreases the amount of sugar for a time, but this finding is not constant, while it is undoubtedly true that even while the sugar increases during the administration of the drug, the symptoms are relieved. The drug has no untoward effects, although it was noted by the families of two patients that even when the symptoms were improving both patients seemed more depressed for a few days following the first administration of the drug, but this symptom soon passed away.

The drug must be continued to keep up its good effects, but the dose can be reduced and increased from time to time as found necessary.

THE RELATIVE VALUE OF THE VARIOUS METHODS FOR THE DETERMINATION OF FUNCTIONAL KIDNEY SUFFICIENCY.*

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It has long been conceded that the chief function of the kidney is the excretion, by processes of selective absorption, filtration, and osmosis, of the effete products conveyed to it by the blood, but the precise manner in which this is accomplished by the intrinsic renal mechanism is a much mooted question and one that bids fair to attract and distract the attention of physiological chemists of future generations. Nevertheless, the great importance of definitely determining the sufficiency or insufficiency of one or both kidneys is to the surgeon a problem of paramount consideration, and has furnished the incentive to urologists, universally, to announce many functional kidney tests. The very variable value of these methods has demanded repeated attempts to perfect a thoroughly reliable technique. The result has been that during the past two decades the advancement in renal surgery has been second to none.

In defining the present status of kidney diagnosis, a twofold consideration becomes apparent: first, the instrumental, including the development of segregators, cystoscopes, ureteral catheters, etc., for the collection of the respective urines; and secondly, the various functional tests, comprising the physical, chemical, and physiological. The first is as important as it is interesting, but the compass of this article forbids its presentation.

It must be admitted that the most scientific as well as the most correct method of determining the function of the kidney is by quantitative metabolic study. Unfortunately, this can be carried out only under exceptional conditions, and even then is not infallible, as has been shown by von Noorden.[1] Consequently it has been necessary to resort to other methods, more practical,

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to demonstrate the health or disease—that is, the functional activity—of the kidney.

Ludwig demonstrated by animal experimentation that the work performed by each kidney varied at any given time. Israel, Kapsammer,[2] and Albarran[3] subsequently confirmed this deduction on the human, the last stating that for short periods the difference amounted to 30 per cent, but that it decreased to 10 per cent for longer intervals, and that in the course of ten or twelve hours the work of the two kidneys was identical. Casper and Richter[4] have at all times vigorously assailed this doctrine and maintain that *healthy kidneys simultaneously excrete practically identical urines.* This dictum is substantially supported by Bardier, Fjodorow, Frenkel, and Friedrich Strauss. This is the key-note of modern renal diagnosis and sounds the fundamental law governing its utility and practicability.

The requisition demanded of any functional renal test is twofold: first, the determination of the combined functional ability of both kidneys, and secondly, the functional sufficiency of each kidney separately. In the practice of the surgeon this means the diagnosis of and the extent of disease of a given kidney, and the prognosis in view of nephrotomy or nephrectomy relative to the sufficiency or insufficiency of the sister organ. The ideal qualifications for such a test should be:

1. Applicability with as simple a technique as possible.

2. Ease of application and accuracy of interpretation.

3. Avoidance of general anesthesia if possible.

4. Determination, within narrow limits, of the amount of work performed by normal kidneys.

5. Constancy of variation in the presence of uniform abnormal conditions.

6. Indication of functional alteration, when such exists, even in the absence of histopathological changes.

7. Demonstration of routine function, as well as the compensatory ability of the kidney under strain.

Deductions will be least erroneous if dependent upon two or more functional tests. *The urologist is quite as much entitled to be conversant with the history and physical examination of his patient before rendering an opinion on the result of his functional test as is the pathologist to know the history and have the gross specimen for study, prior to submission of his diagnosis, following the microscopical examination of tissue.*

Quantity of Urine.—It must have been recognized by Aesculapius that the daily output of urine bore a definite relationship to the health or disease of the kidneys. Consequently, it is logical to infer that in the twenty-four-hour collection of urine we have the oldest as well as the most important measure of the functional integrity of the kidneys.

Odor Tests.—Among the earliest observations on the variations in renal elimination was the diminution or absence in nephritics of that peculiar odor commonly present following the eating of asparagus. Again, the absence of the odor of violets in the urine of gouty subjects after the injection of turpentine was noted. These have been merely interesting phenomena, and are not only too crude but have never been applied in practical functional tests.

Physical, Chemical, and Microscopical Tests.—The color, concentration, specific gravity, albumin and casts are no longer regarded as conclusive evidence of renal insufficiency. It is now well known that both albumin and casts may be absent in nephritis, and, conversely, that the presence of these accidental urinary constituents does not insure primary disease of the kidney.

Normal Urinary Constituents.—For a time it was believed that the problem of renal sufficiency or insufficiency could be solved by the quantitative estimation of urea, chlorides, phosphates, total nitrogen, creatinin, etc. Such a method is manifestly fallacious, inasmuch as the output of these substances is markedly influenced by the amount carried to the kidneys for elimination. These tests to be of any value must be dependent upon a definite known intake of fats, carbohydrates, proteids, etc. This involves extensive and impractical meta-

bolic studies, and even then, as has been stated, the results are not always dependable.

Valueless as may be the determination of the amount of these salts in the total urine, it is indisputable that their comparative determination from synchronously catheterized ureters is decidedly valuable. Particularly is this true if there be much difference between the two sides. It should be remembered, however, that the most important of these substances is urea, and its determination is merely a link in the chain of functional renal diagnosis. Moreover, the Doremus ureometer is the instrument commonly employed for its determination and the results are very inaccurate.

Drugs.—The toxicity produced by certain drugs in renal disease probably directed attention to the fact that they might be employed advantageously in functional kidney diagnosis. Among the various drugs in which this retardation of elimination occurred may be named alkaline carbonates, Dover's powder, iodine, mercury, potassium, quinine, sodium and salicylate preparations. (Chauvet,[5] Charcot and Cornil,[6] Duckworth,[7] Roberts,[8] and Todd.[9])

Fuchsin.—The factors operating to jeopardize the efficiency of any drug for purposes of testing the activity of the kidneys must be patent to all. Consequently, drugs failed of their purpose and have long since been forgotten. Various aniline dyes grew into favor and have effectually supplanted drugs. The first of these was fuchsin, introduced in 1877 by Bouchard. The idea was clever, but the selection of the dye proved to be a failure and was little used, the results being very unsatisfactory.

Methylene Blue.—Twenty years later Achard and Castaigne[10] introduced methylene blue as a test for the functional ability of the kidney. This marked the advent of so-called chromocystoscopy, which in its present perfected technique is the greatest boon of urological diagnosis. By the employment of a dye it became possible to render opinion relative to the activity of the kidneys without resort to ureteral catheterization, an act which, theoretically at least, it must be admitted, may be conducive to the production of an ascending infection of the ureter and kidney, remote as the possibility may be. In the employment of methylene blue, as in all other aniline dyes used for the determination of the kidney function, the following factors are considered in drawing conclusions: (1) The initial onset of the excretion of the coloring matter; (2) the time of maximum intensity of the elimination; (3) the duration of the excretion; and (4) the determination of the quantity eliminated. The Germans soon raised serious objections to the use of methylene blue. It was found that it was occasionally eliminated as colorless chromogen and therefore possessed inconstancy of color reaction. Pugvat and Revilliod[11] have shown that occasionally the dye undergoes unknown chemical changes in the body, and even in health may not be demonstrated at all in the urine.

The dye does not make its appearance as a color substance for one-half hour following injection, the elimination for the fifteen minutes previous occurring as a chromogen, requiring the addition of acetic acid and heat to elicit the color. Furthermore, the duration of elimination, even in health, may continue for six days, and during this period, as pointed out by Chauffard[12] and Chauffard and Cavasse,[13] the excretion is not continuous and uniform, but irregular and intermittent. Therefore, because of its inconstancy, variability, and prolonged duration of elimination, methylene blue has fallen into disrepute.

Rosanilin.—Rosanilin or rosanilin trisulphate of soda was first introduced by Lepine[14] in 1898. It possesses the following advantages over methylene blue: It is eliminated with greater intensity, the duration of excretion describing a monocyclic curve in contradistinction to the polycyclic curve of methylene blue; also the duration of its elimination is not so prolonged. Furthermore, it is almost entirely eliminated by the kidneys. Rosanilin is one of the very best dye substances that can be utilized for testing the renal activity; nevertheless, it has never attained any popularity.

Cryoscopy.—By virtue of the process of osmosis occurring through the capillary walls, Bowmann's membrane, and the epithelium of the tubules, the waste products of metabolism conveyed by the blood are eliminated. Raoult and Van't Hoff have shown that osmotic pressure is proportional to the molecular concentration of the solution. Dreser[15] demonstrated that the molecular concentration of a fluid could be easily determined by the determination of the lowering of the freezing-point, and subsequently Koranyi,[16] in 1898, was the first to make practical the method of determining the work performed by the kidney by cryoscopy. The correctness and the value of Koranyi's work has been ably confirmed by many investigators (Albarran, Bernard and Bousquet,[17] Bouchard,[18] Claude and Balthazar,[19] Lindemann,[20] Moritz,[21] Richter and Roth,[22] Senator[23]), and the practical value, clinically, of the determination of the lowering of the freezing-point as a test of renal sufficiency is to-day staunchly supported and practiced by none others than Casper and Richter,[4] Kümmell,[24] and Rumpel.[25] The first do not place reliance solely on cryoscopy, but draw their conclusions from the associated physical, chemical, urea, and phloridzin findings of synchronously catheterized specimens. The last two vigorously uphold the merits of cryoscopy, emphasizing the importance of comparative determinations of the lowering of the freezing-points of both blood and urine as originally recommended by Bernard.[26] Under normal conditions the urine exhibits a range from —0.9° to —2.3°, and healthy kidneys in a given subject may give a variation of 0.4°. Moreover, conditions of polyuria and anemia seriously embarrass the results of lowering of the freezing-point of the urine. The normal blood, on the other hand, shows a fairly constant freezing-point of —0.55° to —0.57°. The bone of contention lies in the question whether or not operation shall be done in case of a freezing-point under —0.60°. Albarran, Kapsammer, and Rovsing head the affirmative, Kümmell the negative, with a statistical report commanding the greatest consideration.

My belief relative to the value of cryoscopy *per se*, as a test to determine the renal function, is that as an indication or contraindication to surgical intervention it is of importance only in relation to the urines of each kidney separately as compared with the molecular concentration of the blood, and that cryoscopy of the total urine alone or of the blood alone is valueless. Such a procedure entails bilateral synchronous ureteral catheterization, an act which cannot be accomplished in all cases. Therefore, although in disease of the kidneys the molecular concentration of the blood is increased and the freezing-point lowered, while the molecular concentration of the urine is diminished and the freezing-point raised, and comparative cryoscopy of the blood and urine is the most accurate way of determining this molecular concentration, so many factors influence the character of the urinary output, as water, diet, etc., and the technique of cryoscopy is so laborious, that for the urologist it is already devoid of popularity.

Phloridzin.—In 1885 von Mering demonstrated the peculiar property possessed by phloridzin of producing an artificial glycosuria following its subcutaneous injection, by virtue of its specific action on the renal parenchyma. Casper and Richter,[4] in 1899, were the first to introduce the use of this substance in functional kidney diagnosis. For a decade phloridzin was heralded by many as deserving of first choice in the realm of functional renal tests. Achard and Delamere[27] showed that it was superior to methylene blue in acute and subacute nephritis, since in these affections the excretion of the latter might not only be normal but increased. Some have drawn their conclusions from the percentage of sugar eliminated, others from the total quantity excreted, and Kapsammer particularly has directed attention to the time of appearance of sugar in the urine.

The original popularity of phloridzin is rapidly disappearing. Grave fallacies exist. It would appear that the test is too sensi-

tive and allows of exaggerated ideas of the extent of disease encountered. On the other hand, wide variations have been observed in normal kidneys, and even an absence of glycosuria after injection has been noted in cases demonstrating no pathological condition. Therefore, owing to serious inconsistencies, the fact that the solution must be prepared fresh each time, and the necessity of laborious, prolonged, and sometimes impossible technique, phloridzin has been found to be less dependable than many other functional tests.

Electrical Conductivity.—The determination of the electrical conductivity of the urine was announced by Schäfer[54] and Koeppe.[55] It depends upon the salt content of the fluid—that is, the number of ions—and is measured in ohms of resistance. Consequently, it takes into consideration, principally, the mineral content of the urine. The application of this method employs the Kohlrausch apparatus after the principle of the Wheatstone bridge. As in cryoscopy, the test to be of real value must be a comparative one of both the blood and urine. Turner[56] states: "A blood of high resistance indicates that the proportion of salts in the blood is small or that the proportion of corpuscles present is large. Hence a high resistance of the blood but a low resistance of the urine is indicative of health." Consequently, a hemorenal salt index has been suggested. This has been determined to be 3. An index above 3 means increased health; below 3, disease, and contraindicative of surgical intervention.

The method possesses certain advantages over cryoscopy, in that much smaller quantities of blood and urine are required, and that it can be carried out much more quickly. Electrical conductivity as a functional kidney test is destined never to become popular, because of the complexity and cost of the apparatus, the training and skill required for its performance, and the fallacious results obtainable unless the water intake and diet are accurately determined.

Indigocarmin.—Indigocarmin was first employed by Heidenhain[28] in studying the physiology of the kidneys. He also proved that the elimination through the kidneys occurred constantly as a blue coloring matter, and that the anilin color substance is excreted from the epithelium of the tubules, while from the glomeruli a colorless secretion takes place. Völcker and Joseph[29] in 1903, however, were the first to introduce carmin-ceruleum as a valuable measure in functional kidney diagnosis. Since that time this anilin substance has enjoyed an ever-increasing and amazing popularity (Bier,[30] Blum and Prigl,[31] Blumreich,[32] Döderlein and Krönig,[33] Fueth,[34] Hofmeier,[35] Joseph,[36] Karo,[37] Kapsammer,[38] König,[39] Kümmell,[40] Keydel,[41] Kakels,[42] Rosemann,[43] Riese,[44] Rauscher,[45] Sellheim,[46] Suter,[47] Thelen,[48] Thomas,[49] Vogel,[50] Zangemeister[51]).

Indigocarmin exhibits the following points of superiority over any other anilin substance used for the determination of the renal function: (*a*) Earliness of onset of elimination; (*b*) constancy of color reaction; (*c*) intensity of color excretion; (*d*) shorter duration of elimination; (*e*) ease of application of test; (*f*) ability to draw immediate conclusions; and not least of all, (*g*) the absence of dependence upon ureteral catheterization.

It is rarely necessary to observe more than the initial onset of the excretion of the dye. Although other substances, as rosanilin and phenolsulphonephthalein, are more completely eliminated by the kidneys, that fact seems to play no part in the value of indigocarmin as a functional test even when resort is had to quantitative determinations. Oppenheimer[52] has attempted to use the Duboscq colorimeter to determine the percentage of dye output, but found that the color did not lend itself satisfactorily to colorimetric readings on account of peculiar color reactions produced by the urinary constituents. I have succeeded in reducing this difficulty by using urine instead of water as a diluting medium both for the control and specimen. Moreover, even in employing distilled water I have found the colorimetric readings just as trustworthy

in the case of indigocarmin as with other substances, notably phenolsulphonephthalein, which has been enthusiastically launched recently as a valuable renal test by Rowntree and Geraghty.[53] Although it is acknowledged that 25 per cent of the dye is excreted by the kidneys during the first twenty-four to forty-eight hours after injection, I have found that 10.17 per cent is eliminated in the first three hours, and that only 4.7 per cent of the total output for the first four hours is eliminated during the fourth hour, whereas in the case of phenolsulphonephthalein 8.1 per cent is eliminated under similar conditions, proving, therefore, that the elimination of indigocarmin is more rapid and presumably of shorter duration than phenolsulphonephthalein. I have also proved that the onset of elimination of indigocarmin is earlier than phenolsulphonephthalein. In short, from my experience, although at times additional data are to be obtained from a study of the intensity, quantity, and duration of the elimination, it is my belief that a correct observance of the onset of the excretion of the dye is all-sufficient for the practical purposes of the surgeon.

Albarran's Experimental Polyuria Test. —In 1904 Albarran established two facts: First, that a diseased kidney functionates more uniformly than its sister organ, and that the uniformity of function is directly proportional to the extent of the disease; and secondly, that in the case of unilateral disease, if the kidneys are subjected to additional forced work, the increase of function occurs on the healthy side. These facts form the basis of the experimental polyuria test. The fundamental procedure in the technique is bilateral synchronous ureteral catheterization. Urine is collected from the two sides for one-half hour. The patient is then required to drink 400 to 600 Cc. of water, and the urine again collected at half-hour intervals for three hours. Conclusions are then based upon the amounts collected before and after the forced intake of water, with particular reference to the work performed by each kidney. In determining the sufficiency of the renal function, Albarran does not depend upon the polyuria test alone, but in conjunction with cryoscopy, phloridzin, total chlorides, and urea.

The test is not only impractical, but may be fallacious for the following reasons: (1) Except in the female, it is frequently impossible to employ ureteral catheters that will completely occlude the ureters, thereby preventing an escape of urine around one or both catheters into the bladder; (2) two or three hours is an unjustifiably long time to allow the ureteral catheters to remain *in situ;* (3) the inability of some patients to drink the quantity of water required; (4) occasionally it will be impossible to produce polyuria by the increased water intake; and (5) in slight lesions of the kidneys there will be no perceptible difference between the functions of the two sides.

Phenolsulphonephthalein. — The latest functional renal test is that by the use of phenolsulphonephthalein, first prepared by Remsen[57] and later described by Sohon.[58] During the present year Rowntree and Geraghty have made an exhaustive study of the experimental and clinical value of this substance as an agent in the determination of the sufficiency of the kidneys. They are enthusiastic over its merits, stating that it possesses advantages over all other functional tests and is better adapted for the purposes of such a test than any other drug thus far utilized.

The technique of the test again necessitates the synchronous bilateral catheterization of the ureters. The patient is required to drink 600 to 800 Cc. of water prior to the administration of the drug. Urine is collected from both sides for the physical and chemical tests. One cubic centimeter of solution containing six milligrammes of phenolsulphonephthalein is then injected subcutaneously, and the urines collected in test-tubes, each containing one drop of 25-per-cent NaOH. The drug in acid urine produces an orange-yellow, but in alkaline solution is transformed into a brilliant amethyst-red. In addition to noting the onset of elimination, Rowntree and Geraghty lay particular stress on the quantitative percentage elimination of the drug

for the first two hours after injection. This they claim is most important and reliable because of the relative high, speedy, and complete elimination of phenolsulphonephthalein. For quantitative determinations, the Duboscq colorimeter is most serviceable and very accurate.

I have made comparative studies of the value of phenolsulphonephthalein and indigocarmin on the human. Although my evidence is not extensive enough to be conclusive, the findings in the submitted normal case will suffice to illustrate my results thus far:

Onset.	Percentage of Elimination				
	1st hour.	2d hour.	3d hour.	4th hour.	Total.
Indigocarmin: R 10 minutes, L 7 minutes	3.35	5.47	1.35	0.51	10.68
Phenolsulphonephthalein: R 18 minutes, L 18 minutes	11.	6.95	3.22	1.89	23.06

It will be observed, contrary to the statement of Rowntree and Geraghty, concerning the early appearance, rapidity, and completeness of the elimination of this phthalein by the kidney, that the initial onset of the excretion of the drug is delayed approximately twice as long as indigocarmin, and that during the fourth hour after injection the percentage of excretion of phenolsulphonephthalein was over three times that of indigocarmin, indicating that the duration of elimination of the former was longer than the latter. Moreover, the employment of the phenolsulphonephthalein is attended with the following disadvantages: It depends upon bilateral ureteral catheterization, which is an impossibility in some cases. By means of the use of an alkaline color indicator the technique is slightly more complicated than in some other tests. The quantitative determination unduly prolongs the examination. I cannot agree that the colorimetric properties of phenolsulphonephthalein lend themselves to Duboscq readings to better advantage than indigocarmin, and in the latter case the onset of elimination is of greater practical value than quantitative determinations. Its sole advantage over indigocarmin lies in the lesser amount employed for injection, being in the ratio of 1:20, consequently less productive of local irritation. This, however, is inconsiderable and negligible when properly used as opposed to the other merits of indigocarmin.

SUMMARY AND CONCLUSIONS.

1. The most accurate and dependable test for the determination of the renal function is that by quantitative metabolic study. Unfortunately, save in rare instances, such a study is not only impractical but impossible, and for the purposes of the surgeon wholly superfluous.

2. It is admittedly beyond dispute that the association of two or more tests is productive of more reliable data than the results of a single determination.

3. Any test or tests dependent upon synchronous bilateral catheterization of the ureters for collection of urine from the respective sides have a limited field of applicability, inasmuch as, in those advanced cases in which it is commonly most desirable to determine the sufficiency or insufficiency of one or both kidneys, it will be impossible to catheterize both or either ureter. Consequently, the vast majority of the functional kidney tests which have been advanced and recommended are doomed to unpopularity and inevitable oblivion.

4. It will be found that in 75 per cent of cases, with a symptomatology referable to vesical and renal conditions, the simple cystoscope will localize the lesion in the bladder. Supplement this, when indicated, with one of the anilin dye tests (chromoureteroscopy), notably indigocarmin, and the field of kidney diagnosis can be boldly trespassed.*

5. The cystoscope of greatest utility is the type of the Buerger-Brown or Schlagintweit instrument, because, by virtue of the irrigation-evacuation principle, the mechanism is such as to render simple cystoscopy, chromoureteroscopy or ureteral

*For the detailed technique of the employment of indigocarmin consult the author's articles on "Chromocystoscopy in Functional Renal Diagnosis Based upon the Employment of Indigocarmin," *Surg., Gynecology and Obstet.*, April, 1909; and "Chromoureteroscopy in Functional Kidney Diagnosis," *Zeitschr. für Urologie*, Feb., 1911.

catheterization possible, whereas by the use of other instruments such acts may be impossible in troublesome cases of pyuria and hematuria.

6. A review and analysis of the various tests herein discussed demonstrate that, for the surgeon, at least, the most valuable functional kidney test is that by the employment of indigocarmin, not that it may not be infallible—none fulfils that requisite—but because it is paramountly the most practical.

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REFLECTIONS UPON THE TEACHING OF THERAPEUTICS, BASED UPON FORTY YEARS' EXPERIENCE.

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The profession of medicine exists for two purposes—first, the maintenance of health, or in other words, the prevention of disease; secondly, for the alleviation and cure of pain and of disease. These two branches are in themselves distinct, and may well be spoken of as Preventive Medicine and Remedial Medicine. Concerning Preventive Medicine I shall have nothing more to say in this article.

Into the study of remedial medicine there enters the consideration of many sciences, both abstract and remedially practical. Among these various studies is commonly reckoned therapeutics, or that study which has for its object the application of the forces of nature, including almost every manner of natural force, mechanical, physical, chemical, and what may be known as drug-force, the force which is of course often chemical but very often also of a nature which is at present not understood. It is plain that therapeutics is the keystone of the medical arch, the knowledge of anatomy, diagnosis, etiology, natural history of diseases, etc., being so far as Remedial Medicine is concerned practically useful only as they subserve the purposes of the therapeutist. Of what good is it to the patient that a doctor should be able to diagnose to the very finest point a case of heart disease if he does not know what to do to relieve the condition and protract life? I have in my lifetime seen many men, magnificent diagnosticians, but as doctors practically inferior because they had not acquired the knowledge and the therapeutic tact or instinct necessary for the successful use of remedies. I well remember one very famous medical professor, now transported by the gods to a wetter but to him more congenial clime, whom I often met in consultation, who would make out the diagnosis and give a statement of the condition, and the probable result of the do-nothing therapeutics which he practiced, with most extraordinary skill and accuracy—but beyond this naught. As a consultant he was always, with me, most alert, intensely interested in the case, and instructive in his sayings and doings until he came to the question, "Now, what shall we do with the patient?" when he would shrug his shoulders, look around the room, and say, "Oh, you know all about that;" and that was the end of his interest.

Often, in talking with some noted doctor, I have remembered the saying of my old uncle, Prof. George B. Wood: "Show me a man who says drugs are of no value in the treatment of disease, and I will show you a man who does not know how to use them." Based on forty years' experience were these words; confirmed by forty years more of experience have they been in a second generation.

The study of what is often loosely called "therapeutics," but should be called pharmacology, consists of the study of materia medica, pharmacy, and therapeutics, in-

cluding in the latter term the physiological action of drugs upon man and upon the lower animals, as well as the use of drugs in disease.

Materia medica—that is, the study of the substances used as drugs—has in the gradual specialization of medicine become largely the province of the apothecary; indeed, it is often dropped entirely from medical courses. This has always seemed to me an anomaly, for certainly to be a cultured gentleman in his profession the doctor should be able on sight to tell a ball of opium from horse-dung. I believe all medical schools ought to have a short, carefully thought-out course on materia medica, in which the student should be required to learn sufficient to enable him to go into a drug store, and not appear like an Irishman out of the bogs freshly landed in the streets of New York or Philadelphia. The study of pharmacy especially belongs to the province of the apothecary, but on the other hand its complete avoidance by the medical schools is at least one of the efficient causes of the extraordinary prescribing of drugs which are chemically incompatible, of mixtures that will not mix, and of the various amusing and at the same time saddening messes that are sent to be "licked into shape" by the unfortunate apothecary.

With this much of prelude I come to the consideration of the subject which is the main purpose of the present article. From this discussion shall be omitted all forms of remedial measures except medicines or drugs.

THERAPEUTICS.

Previous to 1874 therapeutics had been empiric, although some of the books upon the subject had given details of the symptoms produced by the administration of various drugs to the lower animals. In 1874 I published a book in which it was attempted to put therapeutics upon a scientific as well as practical basis. The plan of action was with each important drug to discuss its influence upon man from the observed effects of small doses up to those which were capable of producing death. After this discussion the attempt was made to explain the physiological way or method in which the drug produced symptoms in man, by experiments upon the lower animals; and finally the application of the results obtained to the practical needs of medicine, patched out, when the cloth was insufficient for the garment, by empirical knowledge. The first edition of the work sold immediately, and the final result was that in America and in the best schools of England the general plan of teaching spoken of was adopted.

In Germany there arose a school of therapeutic teaching in which comparatively little attention was paid to the effect of drugs on man, and the effort to elucidate the action of a drug was chiefly by experimentation upon animals. Most of the professors had been educated as physicians, but were especially highly educated chemists, and taught largely from a chemical point of view, and though not all the German universities adopted this method of teaching it may be called the German method in contradistinction to that of America and England. The effect of the German method upon the students was to produce men learned in the chemistry of drugs, learned in the symptoms and effects produced by drugs upon a half-dozen species of the lower animals, but not equally proficient in the knowledge and understanding of the effects upon healthy men, much less upon the sick. On the other hand, the American method inevitably produced men who apprehended, first, the symptoms and physiological action of drugs upon the healthy man, as worked out by legitimate experiments made upon animals and upon man, and by the records of poisoning; and secondly, by the application of this knowledge to the treatment of disease.

That the German teachers themselves who adopted what we may call the German system felt the deficiency of their method may be shown by two brief anecdotes.

The first time I ever visited Professor Schmiedeberg I was shown into his private room in the laboratory, and asked to take a seat whilst the *diener* went to find the Professor. Whilst waiting great was my astonishment to see, lying on the private

table of Professor Schmiedeberg, a copy of my Therapeutics, bethumbed almost like the first Latin book of the schoolboy. Again, talking the subject over with Professor Liebreich of the University of Berlin, he said that his position in the university did not allow him to practice medicine, but that he found it so impossible to teach pharmacology satisfactorily to himself without drug-contact with humanity that he had started and maintained at his own expense an active and successful dispensary.

The effect of the German method upon original investigation is pronounced; the man who is trained as a chemist will naturally be more actively interested in chemical problems, and while his researches may lead to the infrequent discovery of substances of value for the relief of human suffering, after all the art of clinical therapeutics has not greatly advanced by these studies.

The science of pharmacodynamics, not correlated to clinical therapeutics, is like a sail without a boat. Perhaps no medical substance has had more ability and time spent upon it than ricinin. Therapeutically, this work has been to show that ricinin is an active poison, which is of no value in human medicine, although the expressed oil of the castor bean—*Ricinus communis*—is harmless and very useful, a fact which the little Bescherine negro knows very well as he completes his toilet by smearing his body thickly with castor oil, and then, fearless of sun or insects that bite, lies in the sand of the Soudan or Upper Egypt, naked and unashamed, pot-bellied and happy, in the sufficiency for the day of *dhurra* (Indian millet), locusts, lizards, and such ilk, and thoughtless for the morrow.

It may be permitted to an old man for once to be egotistical in using his own experiences as illustrations. Every medical research of much practical value that I have ever made has had its inspiration in the sick-room. The horrors of the sunstroke ward when I was a resident physician in the Pennsylvania Hospital, taken with the childish talk and actions of the visiting staff, led to my experimento-clinical studies which ended in the discovery of the nature, pathology, and treatment of the sunstroke, and finally to the study of fever in general, to which I chiefly owe my membership in the National Academy of Science. The clinical publications of Lauder Brunton gave rise to my paper on Amyl Nitrite, which won the Boylston Prize. Out of the furious discussion between the various clinicians of Europe on the action of hyoscyamine, and my conclusion therefrom that there must be a much more powerful alkaloid in the crude hyoscyamine of commerce than in hyoscyamine itself, grew the discovery of the physiological and medical properties of hyoscine. First on animals, then on myself, then on my wife, then on my patients, I employed the new drug. I then gave the facts to the world. The contradictory, anomalous and often senseless and even lethal procedures of surgeons in the treatment of the accidents of anesthesia led to my Berlin Address, which brought system out of chaos and changed the treatment of the accidents of anesthesia throughout the world. And so on to the end of the chapter.

I might go to the books for many illustrations of the point under consideration, but have used my own experience because more certain of my own mental processes than of those of other coworkers. *Ex uno disce omnes.*

The pharmacodynamist, to be useful to mankind, must be one of two things: First, a graduate of medicine, a man who is however chiefly a physiological chemist, and Johns Hopkins University has done well to have the Chair of Physiological Chemistry held by its pharmacodynamist, whose important researches, it may be mentioned, have been in physiological chemistry. The tendency of the teaching of such a professor upon the student will be to cause him to look upon therapeutics from a chemical rather than a clinical point of view, so that he will never become a strong therapeutist. Secondly, the professor of pharmacodynamics, or rather of pharmacology, may be a man who is both a pharmacodynamist and a clinician, and whose researches have been so closely connected with the daily practical work of the doctor that he alone of all men is the

one to teach would-be practitioners of medicine those underlying principles of therapeutics which he has made a part of himself, so to speak, and which may make the foundation of future successful bedside work on the part of his students.

Nor rational is the division of the teaching of therapeutics into two chairs—the occupant of one of which shall be a pharmacodynamist who knows little of clinical medicine, nor by experience how a drug acts upon man; the other a professor who has never, perhaps, made a pharmacodynamical experiment upon the lower animals. He who teaches with knowledge garnered from books is a schoolmaster, not a professor. To be a professor, as I would use the word, is to be filled with practical knowledge garnered from nature or everything connected with the general subject in hand; and a professor of therapeutics should be a man who has been saturated by work in the laboratory and also at the bedside with the science and art of the treatment of disease.

The *reductio ad absurdum* of the teaching of therapeutics is found in those colleges where the professor has not studied medicine at all, and therefore can have little or no personal knowledge of the action of drugs upon healthy men, much less upon the sick, and absolutely no apprehension of the needs of the medical practitioner. The relations of bacteriology to medicine are almost as close as are those of chemistry; it may be that soon we will see a bacteriologist filling the chair of pharmacodynamics or therapeutics, as we now see the chemist. The truth is chemistry should be taught by the chemist, bacteriology by the bacteriologist. Physiological therapeutics should be taught by a man who receives from the chemist and the bacteriologist their various products, and knows from personal experience the physiological action of these products upon animals, including man, and also knows by personal clinical experience their influence upon the sick and their special values in the treatment of disease. To such a chair should be allotted at least one assistant, well versed in physiological experimentation with drugs and the teaching of it; and perhaps a second one, who has sufficient knowledge of materia medica and pharmacy, and who may be a druggist. Neither of these gentlemen should be required to devote his whole time to his respective laboratory, but allowed sufficient leisure for self-development and research.

In discussing privately the subject of the teaching of therapeutics, I have been continually met with the assertion that no human being can cover the whole that ought to be put under the name of therapeutics in the medical schools. This to me is either nonsense or evidence of the decadence of the personnel of the profession, for men are still living who have covered all these subjects thoroughly and become at the same time famous in abstract science, besides making a competence by the time the retiring age had come; and I know young men living who I believe can do that which has been done by their forebears—otherwise it must be that the personnel of the profession is undergoing decadence. This may possibly be true, and there are some apparent causes for such change.

Thus, when I was a young man, law, divinity, medicine were the only professions; to-day, engineering in its various branches calls loudly and offers far more than does the practice of medicine to its followers. I believe that I would never have been a doctor had the world been in 1860 as it is to-day.

Nevertheless, I myself do not believe in the decadence of the profession, but it is true that there is a dearth of young men properly prepared for a professorship of therapeutics. The reasons for this are very plain: First, the man who devotes himself to therapeutics must expect very small pecuniary return for the output of labor, as eminence in this branch of medicine does not lead to consultation work nor of itself even to success in ordinary practice; secondly, because ten to fifteen years of hard unpaying work are required for the proper preparation of the man for the chair; thirdly, because of the general lack of appreciation by the official governing powers of the requirements which the candidate for a professorship should meet. Too

often there is either no chair of therapeutics in a medical college, or if such chair exist it is filled by some one who never has been properly trained for the purpose.

Once I was written to by one of the most famous therapeutists in Europe for a list of the professors of therapeutics in America. I sent him forty or fifty names. He replied: "In God's name who are these people; I never heard of more than one or two of them."

This dearth of reputation in the therapeutic professors of the country was undoubtedly due to the fact that at that time simple clinicians were appointed to therapeutic chairs. Pure clinicians are, in truth, no more fit for therapeutic professorship than are chemists or bacteriologists.

In conclusion, I would like to say two things to those who have the appointing power in our larger teaching institutions:

First, that nothing is more stupid than the belief that forcing a man to stay in his laboratory will make him a successful research worker. If the spirit of the man is that of a pure laboratory worker, well and good; but if it requires the stimulus of contact with disease and human misery to foster in him the desire to unravel the problems of disease the laboratory may be but a prison-house which prevents him from gathering the materials which are necessary to his development and productiveness. I was once offered a professorship in Johns Hopkins University, with the permission to go to Europe for two years and a salary which would have been about double that which I was receiving from the University of Pennsylvania. I refused this offer, because I recognized that unless I could practice my life would be ruined for scientific work in medicine. With myself, at least, practically all the impulses and ideas which have been the basis of research in physiological therapeutics have come from bedside experiences.

Second, I think at present too much importance is given in some of our large medical schools to the fact that a man is a discoverer of new truths; certainly one may stand at the head of the profession and yet not be a discoverer. In his day Prof. George B. Wood was the most famous physician in the United States, not because of researches made by him, but from the fact that having a judicial, observing, and systematizing mind, with force of character and thorough knowledge of the English language, he was able to furnish the power which forced the adoption of the United States Pharmacopœia and thus brought order out of chaos in the compounding of prescriptions in the United States; to write books which were very largely used as text-books both in this country and in England, and were also in the library of almost every American physician and apothecary as practical guides; and finally was as a medical teacher the best in Philadelphia and probably in the United States. On the other hand, Brown-Sequard, whose original investigations far surpassed any previously made in America, was universally recognized as entirely unfit to be a professor. I have received from time to time many letters, grateful and laudatory, from old students, from as far as Japan and as near as Philadelphia. In none of them, that I can remember, was anything said about my original investigations, but always of the influence which I had exerted upon the lives of the writers by my personality and the power of my teaching.

According to my thinking, in the appointment of a professor there should be considered, first, the character and power as a teacher of the candidate; secondly, his capability of writing text-books or other books which shall have wide circulation in the general profession; thirdly, his capability of originating.

For giving a college rank among similar institutions the amount of original work it puts before the profession is perhaps dominant, but neither the rank and file of the profession nor the laity know of original laboratory results unless there be made some very great practical discovery; so that for the bringing of students to a medical school it is the reputation of the teaching quality of the teachers, together with the practical monographs on disease, the systematic treatises and the text-books written, which count.

VINCENT'S PSEUDOMEMBRANOUS ANGINA—WITH THE REPORT OF A CASE AND ITS TREATMENT.

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Several writers other than Plaut in 1904—among them Vincent, 1899; Mayer, 1902; Fisher, 1903, and recently Murray—have described a spirochæta with an associated fusiform bacillus which they have found in certain cases of diphtheric inflammations of the fauces.

The clinical appearance of these lesions on the mucous membrane of the mouth and fauces is that of a necrotic pseudomembranous area of a dirty grayish color. Upon the removal of this slough a bleeding surface remains.

The condition existing in these cases might be mistaken very readily for ulcerative secondary syphilis or diphtheria, as the lesion presents a similar appearance to either of these diseases.

The method of demonstrating the fusiform bacillus and Vincent's spirochæta is easy of application when the "India-ink method" of Hech and Wilenko is used.

The superficial necrotic area is removed gently, and a small drop of the underlying fluid is placed on a slide that has been cleansed by means of soap and hot water and wiped off with alcohol. To this drop a similar sized drop of India ink (Gunther's or Higgins') is added and mixed thoroughly by means of the platinum loop. The mixture of serum and ink is smeared over the slide by a strip of cigarette paper one-half inch wide, and as it dries rapidly the entire procedure takes less than a minute.

Cedar oil may now be placed directly upon the smeared side of the slide and the specimen examined with the ½-inch (2.0 mm.) oil-immersion lens and the 1-inch (25 mm.) eyepiece.

The various organisms, with the cellular elements of the blood, appear as unstained or clear bodies against a dark-grayish background.

The spirochæta is a delicate spiral organism, having from two to twelve convolutions. It must be differentiated from the Spirochæta dentium, the Treponema pallidum, the Spirochæta refringens, and the Spirochæta buccalis.

The pallidum has from six to twenty-five spirals, delicately constructed, and with pointed ends. About seven turns have been found to be equal to the width of a red blood cell. The refringens is much larger in diameter than the preceding, and has wide irregular turns and blunt ends. The number of spirals varies from two to twelve. The dentium may lead to error with the pallidum, but the turns are not as deep and the organism seldom averages more than five spirals.

The fusiform bacillus is a rod sometimes seen as bent and curved shapes, from 5 to 10 microns in length, with pointed ends, and is not motile. Unless the fusiform bacillus is found associated with the spirochæta a diagnosis should be made only after corroboration by the clinical history of the case. Syphilis and diphtheria should be eliminated as possible factors in the production of the ulceration or slough.

The case I desire to report was referred to me by Dr. Fuller, of Iron Mountain, October 12, 1910. His history was negative. About four years ago the patient had an ulcer of the fauces, for which he was given specific treatment and instructed to use antiseptic mouth-washes. In the course of a month this lesion cleared. The patient gave no history of a primary sore at that time, and no skin symptoms nor other evidences of syphilis developed. At the time of the appearance of this ulcer the patient was in a hospital suffering from typhoid fever.

The present condition began about September 21, when patient's right cheek and side of neck become swollen and he had difficulty in masticating his food. No previous history of syphilitic infection was elicited by questioning the patient.

On examination a necrotic area was observed covering the aperture between the vestibulum oris and the cavum oris pro-

prium, and extending along the gum line to the bicuspids. The right side of the face was swollen, the swelling extending down the side of the neck. The pain was noticed by the patient only when he attempted to masticate or swallow his food. Upon the removal of the necrotic tissue a bleeding surface remained and a putrid odor was present.

Microscopical examination of the serum after removal of the slough showed Vincent's spirochætæ present in great numbers with the associated fusiform bacillus, and a few spirochætæ dentium.

The treatment consisted in giving two grains of sodium cacodylate by the mouth. After removal of the necrosed membrane, tincture of iodine, full strength, was applied during the first two days, and a 25-per-cent solution of peroxide of hydrogen was given to the patient to be used as a mouth-wash six times during the day. A 4-per-cent solution of silver nitrate was used on the following two days, and then the area was touched with a 10-per-cent silver nitrate solution, daily, until the patient was discharged, on October 22, with the lesion healed.

THE RELATION OF SURGICAL ANESTHESIA TO BLOOD-PRESSURE.

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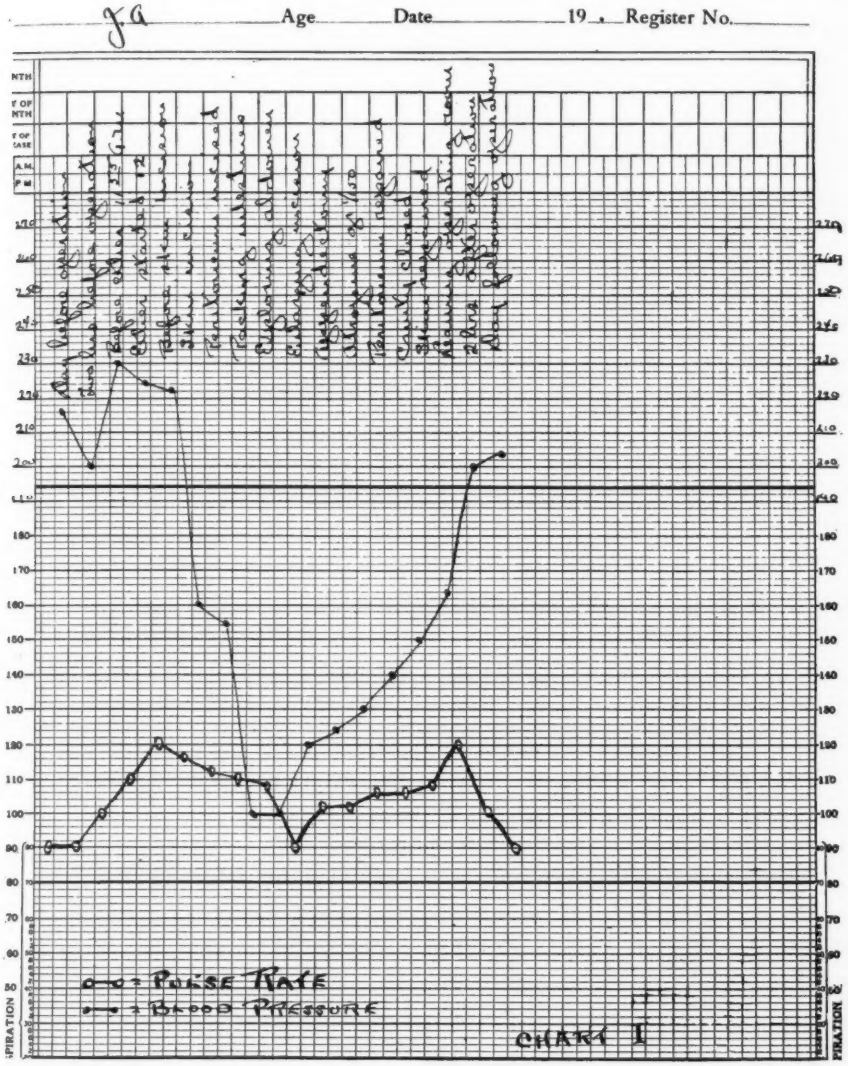
It is well known that in certain infectious diseases, notably pneumonia, if the rate of the heart be increased and the blood-pressure at the same time diminished the patient's state is becoming dangerous. If the pulse-rate rises, and coincidentally there is a rise in the blood-pressure, the condition is not particularly significant, but shows that the increase in rate and pressure is indicative of increased activity of both heart and vessels. It has been shown by Gibson and by Hare that in croupous penumonia, if at any time the pulse-rate per minute exceed the blood-pressure as expressed in millimeters of mercury, the prognosis is rendered grave, while if the blood-pressure in millimeters of mercury remains somewhat above the pulse-rate the outlook for the recovery of the patient is much brighter.

Bearing these facts in mind we have, at the suggestion of Prof. H. A. Hare, made a study of the blood-pressure and its relation to the pulse-rate during the administration of various anesthetics, hoping to determine by instruments of precision the onset of untoward symptoms. In all cases the pressure was taken the day previous to operation, one hour before operation, at the starting of the anesthetic, every five minutes during the operation, one hour after the operation, and the day following; the pulse-rate being recorded each time the pressure was taken. In some cases the Stanton instrument, in others the Tycos, was used.

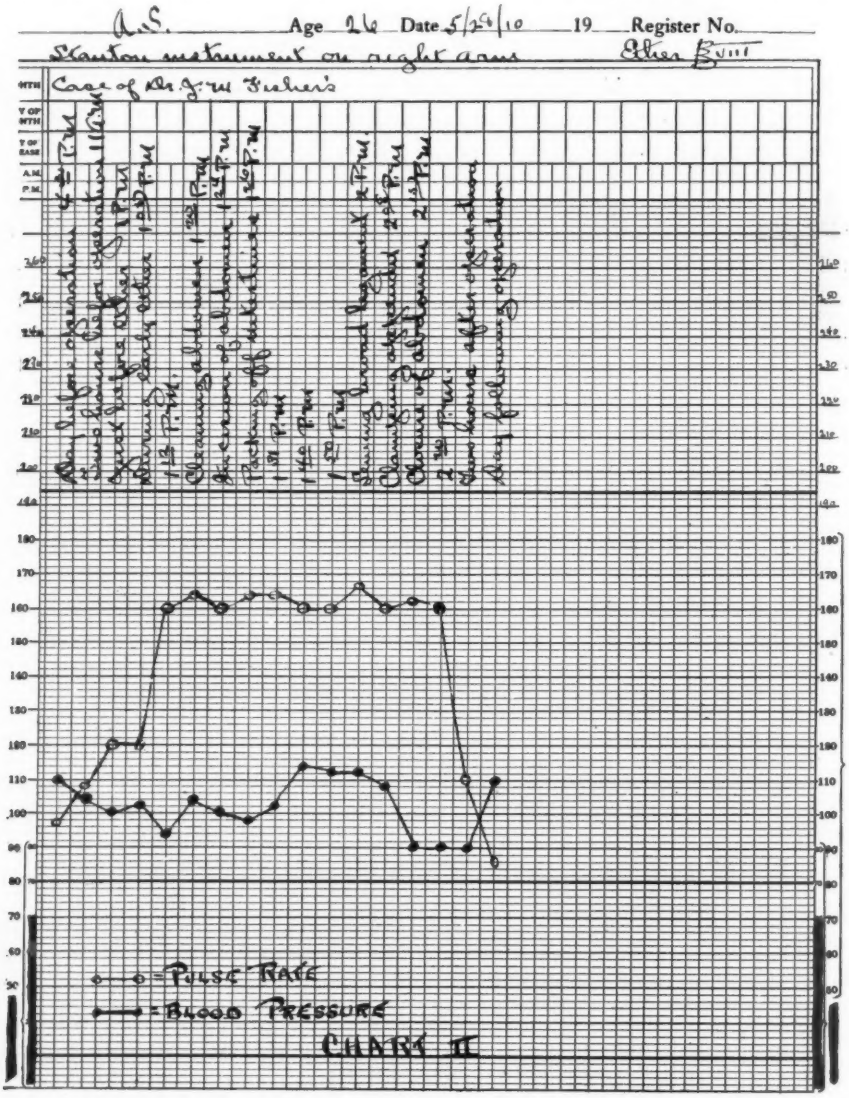
From our studies we have learned that when ether is used the blood-pressure rises at first in nearly every case. When the ether was preceded by ethyl chloride the pressure remained unchanged during the few moments of ethyl chloride administration, but when the ether was started the pressure rose as in the cases in which ether alone was employed. When the skin incision was made it was found that there was a fall in the blood-pressure, which was more marked if the patient was but lightly anesthetized; this fact was also noted in operations where the peritoneum was incised. One point already well known was once again confirmed, namely, that if the ether was pushed to the point of very deep anesthesia during the operation the blood-pressure fell in proportion to the degree of ether saturation.

The following cases with a few notes will be of interest from a therapeutic as well as from a physiological standpoint:

Chart I.—This chart shows that the blood-pressure the day previous to operation was abnormally high (225 mm. Hg) and on the day of the operation was 240 mm. Hg, but at the beginning of the operation the blood-pressure fell dangerously, with a simultaneous decrease in pulse-rate (from 120 to 90). The question at once arises whether this fall of pressure was great enough to be dangerous in itself. We think that the answer must be in the affirmative, since it is generally considered that normal systolic pressure is about 140 mm. of mercury, and in this instance it rapidly fell to 100. On the other hand, it is equally noteworthy that with the fall in pressure there was practically simultaneous decrease in pulse-rate amounting to 30 beats per minute. Here again the question arises as to the significance of this fall of pulse-rate: did it indicate depression of the heart or, on the other hand, represent diminished heart action because less demand was

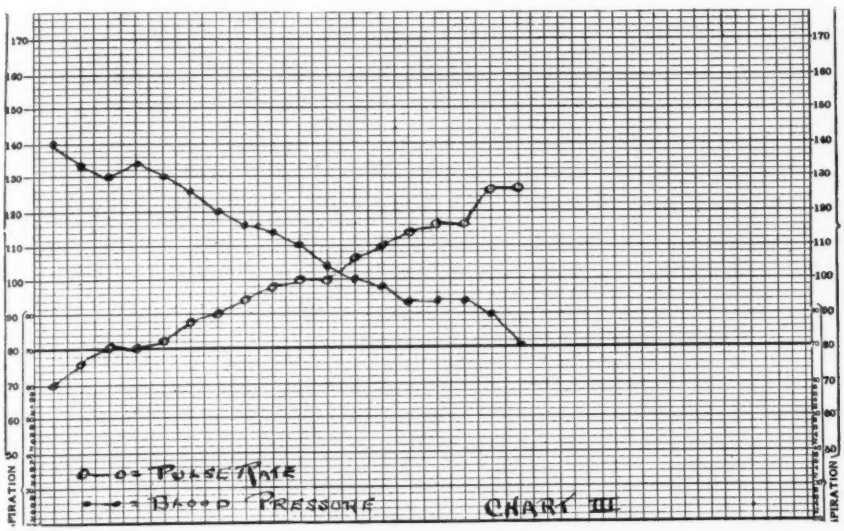


made upon this viscus? A sharp fall of pressure usually results in a marked quickening of pulse-rate, since peripheral resistance is diminished and the heart endeavors to fill the relaxed vessels. It might therefore be argued that a diminished pulse-rate indicated that the heart was too feeble to increase its speed when peripheral resistance was decreased. The decision as to this point can only be reached with accuracy by listening to the heart sounds, by palpating the radial artery, or by estimating the pulse force by deducting the diastolic from the systolic pressure. While we have no observations of this character in this case we are inclined to the belief that actual depression of the heart was not present, since in a very short time, while the ether was being continued and the operation in progress, both pulse-rate and blood-pressure rose sharply to a point far above normal, which they would not have done if the heart or vasoconstrictor center were materially depressed.


A.S. Age 26 Date 5/24/10 19 Register No.
Stanton instrument on right arm Ether Burt
Case of Dr. J. M. Fisher's
Pulse-rate
Blood-pressure
CHART II

The second half of this chart would therefore seem to indicate that the patient's condition was at no time serious, as the early fall in pulse-rate and blood-pressure would indicate. But had the pressure remained low and had the pulse-rate increased until it exceeded per minute the pressure as expressed in millimeters of mercury, his state then would have been without doubt cause for alarm.

Thus in Chart II it will be seen that as the pressure fell from a point already abnormally low, namely 110 to nearly 90, the pulse-rate increased until it was 160 while the pressure was only 90, thereby more than



reversing the normal relative position, it being recalled that the normal pressure is 140 and the pulse-rate not over 80. As illustrative of a chart that may be considered most dangerous to the patient the following diagram is of interest (Chart III):

The fact is stated in Keen's Surgery that many hold that in a critical part of an operation, when the surgeon believes that the nervous system is going to be subjected to great shock by incising peritoneum or drawing on a pedicle, the anesthetic should be pushed in order that the nervous system might be so obtunded that shock would not be felt, but when it is remembered that ether, chloroform, and ethyl chloride produce their anesthesia by acting upon the cerebral cortex and exercise but little if any effect, in therapeutic dose, upon the vital centers of the brain, it becomes evident that the pushing of the anesthetic to avoid shock is not only useless but dangerous, since at one and the same time the patient is under these conditions exposed not only to increased trauma but increased drugging as well. For these reasons we are opposed to this method and are in accord with the opinion expressed by Hewitt and by Hare in Keen's Surgery. We feel the more confident as to the correctness of the view that the anesthetic should be withdrawn at the critical moment in an operation from the studies that we are now reporting.

As illustrative of how injury causes a fall in pressure, it will be seen in Chart I that at the moment when the skin incision was made the pressure fell from 222 to 160, and when the peritoneum was incised and intestines packed the pressure fell further, from 160 to 100.

Bearing these facts in mind, we come to the consideration of treatment in these cases, which may be divided into the preparation of the patient and combating symptoms of circulatory failure after it has begun. Concerning the former we may say that should the patient show a very low

blood-pressure it would be well to wait a few days (except in cases which require immediate attention) and during this time administer tonic doses of strychnine and digitalis, so that when the operation was started the patient's blood-pressure would be nearer normal if not normal. On the other hand, in the class of cases illustrated by Chart I, in which the pressure is abnormally high, rest in bed should be insisted upon and other vascular relaxant measures resorted to, and if examination of the heart at this time reveals that the first sound is feeble tonics should also be given. Should, however, the patient show signs of circulatory failure during the operation by a change in the normal pulse-blood-pressure ratio, active stimulation should be instituted by means of strychnine, atropine, or digitalis injected hypodermically or intermuscularly.

CONCLUSIONS.

These conclusions have been arrived at by the examination of twenty patients who have been subjected to the following operations: Appendectomy, cholecystostomy, hysterectomy, renal calculus, goitre, femoral and inguinal hernia, salpingo-oöphorectomy, orchidectomy, partial oöphorectomy, etc.:

Artificial anesthesia causes in many cases a marked alteration in the ratio between the blood-pressure and the pulse-rate; this is augmented by anything that produces shock to the nervous system during operation, notably incision of the skin or peritoneum or drawing on the pedicle of an organ. If at the time of this shock anesthesia be light, the shock will not be as marked as if the patient were under deep anesthesia.

In certain operative cases which show abnormal blood-pressures, on the one hand whether it be high or low, or on the other hand present evidences of cardiac fatigue or actual myocardial weakness, a suitable course of treatment would be likely to diminish chances of circulatory complications both during and after operation to a considerable degree.

THE RATIONALE OF QUININE PROPHYLAXIS.

The *Indian Medical Gazette* for August, 1910, contains a paper by ACTON on this subject. He asks the question, What beneficial results are obtained from the giving of quinine to produce immunity in those exposed to malarial infection? From the scanty data he has in his possession it will be seen that this method, if employed alone, cannot absolutely control an epidemic, but amongst troops and in jails it can—

1. Decrease the number of malarial cases by from 50 to 80 per cent at the very most, and this only when the dose is given regularly and in an adequate manner.

2. It undoubtedly decreases the gravity of the cases, and hence amongst troops we get a very low mortality. In Peshawar during the severe epidemic of malignant tertian in 1908, very few cases of the pernicious type were observed in the regimental hospital compared with those seen in civil practice. Whilst the so-called "Peshawar fever" (pernicious malignant tertian with vomiting and passing of blood) is rarely seen nowadays, judging by the mortality it must have been extremely common and virulent in former times.

3. By decreasing the actual number of cases it would of course limit the extent of the infected feeding grounds for the anopheles to browse upon. But in regimental lines the women and children are not treated efficiently, and consequently always form potential foci for an epidemic to occur. In a like manner the cases harboring sporonts in the blood should always be isolated until their blood is declared free of crescents.

So it will be seen that this method, if properly and systematically carried out, will further reduce the number of cases amongst the soldiers and sepoys. At the same time the infectious nature of this fever should be more widely recognized and all cases harboring crescents should be segregated at night by mosquito nets; in fact, they ought to be regarded in the same light as chronic bacillary carriers.

EDITORIAL.

"606" OR SALVARSAN IN PARASYPHILITIC CONDITIONS.

Whatever may be the ultimate conclusion of the profession in regard to the scope and limitations of arsenobenzol, Ehrlich's new remedy for syphilis, we think it may be stated without fear of contradiction that much disappointment will ensue if physicians in their enthusiasm over the new remedy fail to recognize that that which has been destroyed by disease cannot, in persons of adult years, be regenerated by the use of any drug. Many years ago, when diphtheria antitoxin was producing its first favorable and extraordinary records, many failed to recognize the fact that lesions already produced in the heart or nervous system, by the toxins engendered by this particular organism, could not fail to cause disability or death if they were once established, because the antitoxin had been used too late to protect them. The same thing holds true in regard to "606." While it is true that gummata, and other manifestations of active syphilis of the nervous system, have been extraordinarily modified and seemingly cured by this plan of treatment, it is also a fact that the post- or parasyphilitic conditions are to a large extent beyond cure. In these mercury fails, and the iodides are probably of use only so far as they prevent the further development of a process originally due to the syphilitic virus but continued as a result of its having ravaged the nervous system. Indeed, it may be said that the information that we have at present clearly indicates that this will be the ultimate conclusion, and it is hardly to be hoped that paresis and locomotor ataxia, the two most frequent serious nervous sequels of this disease, can be materially influenced by the new remedy. Indeed, it is to be remembered that its employment in any dose which could be considered adequate would not be devoid of danger, and Ehrlich, himself, has called attention to the fact that the drug must be put aside, or used with the greatest caution, in patients who are suffering from disease of the central nervous system characterized by well-developed degenerative changes.

Of course, there will be cases on the border-line between acute brain syphilis on the one hand and paresis developing many years after the initial lesion on the other, and in the former type "606" may prove of great value. Probably much will depend upon the use of the Wassermann reaction. If a patient presenting manifestations of nervous syphilis presents a Wassermann reaction positive in type, thereby indicating that he is still, at least in one sense, syphilitic, "606" may be employed; but if optic nerve changes have occurred the question will arise whether the patient is not better without the drug, since arsenic has such a destructive influence in large doses upon this particular portion of the nervous system, and the older remedies, such as mercury and the iodides, are as useful as ever.

It will be many years before the profession will be able to determine how effective the apparent cure produced by "606" really is. We all know that cases of syphilis with mild, or suppressed, early symptoms are those which in after years are peculiarly prone to develop nervous lesions, and so it will take one or two decades to determine how completely the disease is eradicated by this means. It may not be likely, but it is certainly conceivable, that the acute manifestations are prevented or removed by this means, but that the ultimate result is not removed. In any event we think we may repeat what we said at the opening of this note, namely, that parasyphilitic conditions will prove to be the fields in which arsenobenzol will be most limited in its effectiveness.

STERILIZATION OF THE SKIN BY IODINE SOLUTION.

We have already published in our Progress columns more than one item in which the value of iodine as a means of sterilizing the skin prior to operation was emphasized. In the issue of the *British Medical Journal* of June 14, 1910, Stretton, who is the Senior Surgeon at the Kidderminster Infirmary and Children's Hospital, and who has previously recorded 57 cases treated by iodine, reports a further experience of 291 cases so treated to the exclusion of other antiseptics. The advantages which he claims for this method are that it is speedy, that prolonged antiseptic preparations for the patient are not necessary, and that even where parts which are covered by hair are to be operated upon, shaving is not necessary if iodine is applied, at least so far as sterilization is concerned. Out of the three hundred and odd cases which he has had, only three have been unsatisfactory, although 272 were performed for conditions already septic. It will be remembered that iodine acts best if the parts are not first washed, since the washing swells the cells and prevents the iodine from penetrating them. This method can also be used for sterilizing the hands. Stretton does not find that the staining with iodine is persistent, as the stain can easily be removed by washing the hands in a 3-per-cent carbolic acid solution. Towels which are stained can be cleaned by soaking them in such a solution. He does not find that the skin desquamates, as a rule, nor does he think that these applications are prone to produce acute dermatitis. Ordinary tincture of iodine can be employed, but as a rule it is best to use only a 2-per-cent solution in ethyl, not methyl, alcohol. The iodine is freely painted on the part which is to be subjected to operation a short time before the incision is made. It is also freely painted over the part after the incision is closed. Where the wound is infected it may be swabbed out with a solution of iodine. Such a method of rendering the parts antiseptic seems to be particularly efficacious in scalp wounds. For several months this iodine method has been employed at the Jefferson Hospital with excellent results in all departments of surgery.

THE RELATION OF STATUS LYMPHATICUS TO THE ACTION OF ANESTHETICS.

The comparatively few cases of status lymphaticus which have been recorded in medical literature have nevertheless been so startling in their nature and have been so commonly characterized by speedy death that the possibility of the existence of this condition must be borne in mind by the active practitioner—the more so as the presence of this state has already been brought forward as an excuse or explanation for sudden deaths which have occurred under the administration of anesthetics. In this connection we wish to call attention to a valuable article which has been contributed by Dr. Buxton, so well known to the English-speaking world as a skilful anesthetist, to the London *Lancet* of August 6, 1910. After pointing out that these patients are usually infants, or young persons, and that the latter are often of the "tall and weedy type," with a clear, pale skin, he calls attention to the fact that death ensues in this condition in two well-marked types: the sudden or cardiac type, which is most commonly associated with the use of anesthetics, and the more gradual or respiratory type, in which the actual cause of death is supposed to lie in the central nervous system, although it has been thought by some that the mechanical pressure exercised by the thymus gland, which is so commonly enlarged in this condition, is in reality responsible for the respiratory failure.

Dr. Buxton does not believe that the anesthetic is to be considered as the direct cause of death in these cases, as he thinks that when its administration had been followed by death the drug occupied the position of a contributing cause, or that death may have taken place as a coincidence; or, to express it differently, these unfortunate persons are possibly more liable to die under an anes-

thetic than a normal patient. That chloroform has produced the greatest number of these deaths is natural in view of the fact that it is the most dangerous of the commonly employed anesthetics, and also because it is most frequently used in operations on the nasopharynx, in which region pathological changes are exceedingly common in status lymphaticus. In some of the operations during which death has occurred, the pathological condition has more or less interfered with respiration, as in goitre. Finally these patients usually have a low blood-pressure, which is aggravated by the administration of chloroform.

The practical deductions to be drawn from these observations would seem to be that first we should regard all delicate children, and all persons suffering with glandular and goitrous growths, as being possible sufferers from lymphatism, since by taking this attitude we are continually on the lookout for the actual state. If an anesthetic is employed for such cases it should be used with the greatest caution and to the smallest possible extent to produce anesthesia. Probably it is particularly wise in these cases to use oxygen inhalations simultaneously. Buxton also emphasizes the important point that although as little of the anesthetic must be used as possible, it is also essential that complete anesthesia should be induced, and that this anesthesia should be uniform throughout the operation even though it be light.

Concerning the relative safety of chloroform in these cases, it is to be borne in mind that ether because of the swelling of the mucous membrane, and the profuse secretion which it causes, tends to increase any obstructive conditions already present, and furthermore is a respiratory rather than a cardiac depressant. However, Buxton admits that it is a grave question which of these anesthetics is safer than the other in the presence of lymphatism unless symptoms of obstruction are very marked. Taking them all in all, he seems to consider that the use of nitrous oxide and ether is more fraught with danger than is the use of chloroform. As to chloride of ethyl, he thinks it has lost some popularity, but that it is about as safe as chloroform under these circumstances. It is, however, generally held that chloride of ethyl is contraindicated in the presence of respiratory difficulty. Buxton believes that in most of the deaths under chloroform and lymphatism the fault lies not so much in the choice of the drug as in its being administered unskilfully.

To sum up the matter, it would appear that the contraindication to the employment of anesthetics in suspicious cases of lymphatism is really not very much greater than that which exists as to their employment in the case of any feeble child, and Buxton thinks that a diagnosis of lymphatism is not a contraindication to an operation or the use of an anesthetic, although it should cause great care to be exercised.

The possible presence of lymphatism, even although it rarely occurs in its fully developed state, emphasizes the importance of the physician making a thorough physical examination of all patients before they are turned over to the anesthetist for surgical anesthesia.

A NOTE ON THE TREATMENT OF EXOPHTHALMIC GOITRE.

There are few conditions more difficult to control or cure than exophthalmic goitre. As is well known, the disease in some cases begins most moderately and insidiously, and yet proceeds with greater or less rapidity to a fatal termination. In other instances which seem at first far more severe marked improvement takes place, and if we are to believe some reports, actual recovery ensues. We think it will be generally admitted that the usefulness of drugs in the treatment of this condition is exceedingly limited. In the vast majority of cases they are valuable chiefly for the purpose of diminishing the severe and annoying symptoms, and so far as the tachycardia is concerned it is questionable whether they are ever particularly successful in decreasing this cause of discomfort. For these reasons

surgeons have for a number of years past been profoundly interested in the question of operative interference in this disease. Sometimes evil effects ensue because the parathyroid bodies are damaged directly or indirectly, or because so much of the gland is removed that myxedematous symptoms develop, or in still other cases the handling of the gland and its partial excision has resulted in the absorption of such an excess of thyroid secretion that death followed the operation as the result of hyperthyroidism.

Along these lines we have read with interest a report made by an able surgeon to the *Boston Medical and Surgical Journal* of October 6, 1910. Dr. Mumford reports two cases which at first glance would seem to be antagonistic in their teaching. In the first patient, in whom there were sufficiently well-developed symptoms to make the diagnosis beyond all doubt, the careful excision of a considerable portion of the thyroid gland resulted in recovery and in a most satisfactory subsequent state. In the second case, in which part of the gland had already been removed by another surgeon whereby its further resection was rendered most difficult by adhesions, and other obstructions to free operation, the patient died within a very short time after the operation from hyperthyroidism after manifesting the most distressing nervous symptoms. In this case Mumford had endeavored to get the patient in good condition for the operation by a considerable period of preparation, in which he relied upon the hydrobromide of quinine as his principal remedy, and his chief source of regret is that he should have lost valuable time and that he did not proceed to operation almost as soon as the patient came under observation. In other words, he thinks that the first case was operated on early enough and the second case was operated on too late, and that both cases thereby serve to indicate the value of operative interference.

Our own opinion in regard to the use of hydrobromide of quinine in this disease is that it is of no more value than any other salt of quinine, and that quinine in any form over and above its somewhat tonic influence is useless. The administration of the hydrobromide of quinine with any idea that a bromide influence is exercised, in the sense that it is as efficient a nervous sedative as the bromide of sodium, is, we think, without chemical or physiological basis, because the hydrobromic acid is present in too small a proportion to exercise any material effect.

In this connection we also note with interest that Mumford indorses the view of Crile that in these cases it is of the greatest importance that the patient's approach to the operating table should be of such a nature as to avoid all nervous excitement, not only because this is wise in all patients but because increased activity of the gland is thereby probably avoided. Thus, his first patient was allowed to inhale menthol cologne, a small amount of nitrous oxide, and various other volatile substances every day before operation in order to get her accustomed to inhaling volatile substances, and with the further object of preventing her from knowing when an inhalation was to be followed by surgical procedure. So, too, hypodermic injections of sterile water were used to get her accustomed to this method of treatment, and then when the time for operation had arrived, the patient not having been informed of the day or hour, a hypodermic containing morphine was used, the patient was given nitrous oxide while still in her bed, and was not transferred to the operating room until she was completely unconscious, when the operation was immediately performed. By these various means no preliminary nervous strain and little operative shock occurred.

It is interesting in this connection to note that many physicians for years have regretted, and tried to prevent, the nervous shock to which patients were subjected prior to surgical operation. We have repeatedly called attention to this fact in the editorial pages of the GAZETTE and in lectures to medical students. All persons, be they never so phlegmatic, dread operative procedures. The hours of anticipation, followed by the trip on a rolling table from

the bed to the operating room, where the patient at once finds himself by steaming sterilizers, glittering instruments, and weirdly-gowned operators and assistants, are not conducive to nervous and circulatory quiet, and if in addition to this the patient is hurried under the influence of the anesthetic it is remarkable that graver manifestations of profound shock are not present. If there is one field in which psychotherapy can be practiced with the greatest possible advantage it is in this department of surgical work.

TUBERCULOUS GLANDS OF THE NECK.

The impossibility of distinguishing in their early stages simple inflammatory hyperplasias from tuberculous infiltrations of the glands, the fact that practically all the hyperplastic glands and many of the tuberculous ones undergo spontaneous resolution, the general belief that tuberculous glands are an expression of a general tuberculous infection, a minor and unimportant part of it, and the apparently satisfactory results of incomplete operation for removal have acted against the practical application of the now generally accepted principle that a localized tuberculous infection, if radically excised, is followed by permanent cure, and that, if such local infection be complicated by lesions elsewhere, the latter are usually bettered by ablation of the local focus.

The whole subject of tuberculous glands of the neck has been admirably summarized by Judd (*Annals of Surgery,* December, 1910), who after a brief résumé of the recent anatomical studies of the lymphatic system, as applied to the cervical region, notes that the glandular system in the neck terminates on either side in one or two large lymphatic vessels called the jugular trunks, which empty on the right side into the internal jugular or the subclavian vein, and on the left side directly into the thoracic chyle duct.

The supraclavicular group receives no vessels coming from the mediastinal glands. Poirier and Cuneo are quoted to the effect that cases of adenitis following mediastinal or abdominal neoplasms can be explained only by a retrograde thrombosis of the afferent vessels of these supraclavicular glands. Judd observes that a great deal of the incomplete and half-hearted work done in removing diseased cervical glands has been due to the conviction that the diseased condition extends down into the mediastinal glands. Such direct extension is impossible. Therefore neoplasms affecting the cervical lymphatics are local until they pass into the general circulation.

As to the focus of infection, it is seldom possible to demonstrate it positively. It has been shown experimentally that cultures of tubercle bacilli swabbed over the surface of the tonsil leave no trace of passing through the organ but will invade the glands draining the tonsil. Examination of a thousand cases showed tuberculous tonsillar lesions in a little over two per cent. The first enlargement was in 80 per cent beneath the upper portion of the sternomastoid muscle, in 18 per cent in the submaxillary, submental, or parotid regions. In four cases the first cervical gland to enlarge was in the supraclavicular region. In all these latter cases the axillary glands were also enlarged. In children beneath ten exhibiting enlargement of the cervical glands treatment consisted in clearing the throat of adenoid tissues, removal of the tonsils, and proper attention to the teeth and nose; thereafter tonics, hygienic and out-of-door life. The vast majority of these cases get well under such treatment.

The cases requiring complete excision are usually over fifteen years old. Of 649 cases, but 18 were under ten years. If there is a discharging sinus it is first curetted and treated with equal parts of tincture of iodine and carbolic acid. As soon as the sinus heals a radical operation is performed. The incision begins a little below and behind the mastoid process, extends straight down along the outer edge of the trapezius muscle, and then curves forward a little below the middle of the neck, terminating at the juncture of the sternomastoid muscle

and clavicle. Through this incision can be removed all of the deep descending chain, including the supraclavicular and the anterior and posterior groups. If the submaxillary and submental groups are involved, a second incision running parallel to the lower jaw, two fingerbreadths below the lower border, will expose the areas and avoid any important structures—*e.g.*, the lower branches of the seventh nerve. Scarring is avoided by turning back the platysma muscle and the skin in two separate flaps, and by suturing the platysma muscle before closing the skin. It is Judd's custom to drain these cases through a stab incision. The drain must be removed in twenty-four to thirty-six hours. The spinal accessory nerve is usually found without trouble coming out half an inch above the superficial sensory nerves, or it may be identified as it passes into the outer border of the trapezius at the top of the supraclavicular triangle. Should it be accidentally cut it should be sutured immediately, thus preventing a drooping shoulder and lessened arm function. The entire chain of glands beginning at the subclavian vein and running back to the mastoid process can be removed in one piece without injuring a single important structure. If the glands lying in the cellular adipose tissue be regarded as a single organ and the mass be treated in a manner similar to that of tuberculosis of other organs, the result will be as good as though we had taken out a tuberculous kidney or removed a tuberculous cecum.

Of 668 operations performed on 649 patients in the past fifteen years, 19 have since died of pulmonary tuberculosis and 9 of tuberculous lesions elsewhere. Ten of the patients had pulmonary tuberculosis at the time of operation.

After reflecting flaps of the skin and platysma well forward and backward the posterior border of the sternomastoid is freed and the fascia is dissected away from it, starting at the lower angle underneath the clavicular attachment. The omohyoid pulley is exposed, and this is the lowest point of the dissection. In some places the gland-bearing fascia can be dissected with gauze or the finger. On freeing the edge of the sternomastoid from below about half-way up the superficial cervical nerves are reached, some of the branches of which turn over and across the muscle. These being purely sensory can be severed. From one-half to one inch above the sensory nerves the spinal accessory is encountered passing obliquely downward and outward superficially through the fascia to the trapezius. If possible the fascia covering the brachial plexus should be saved, since trauma in this region may cause much pain. In ten cases the chyle duct was wounded; in several instances it healed without causing trouble. Some cases drained profusely for a long time, the patient losing much weight. In two instances the internal jugular vein was sacrificed. Some care should be taken to avoid the phrenic nerve lying on the anterior scalenus muscle. The lymphatic glands in the parotid should be shelled in such a way as not to interfere with the branches of the seventh nerve. In case the wound has been soiled it may be mopped out with tincture of iodine well diluted with water. After suturing the platysma with fine catgut the skin edges are approximated as much as possible with subcuticular suture, giving the finally sutured wound the appearance of a ridge. In a few days this will smooth down to a linear scar. The patient is gotten out of bed the day after operation and encouraged to move the head freely to prevent any stiffening of the muscles. Thereafter out-of-door treatment is advised. In the series of cases reported there was no mortality due directly to operation.

Perhaps the most surprising feature of Judd's communication is the absence of any operative mortality. The operation is an extensive one and often tedious and prolonged. With the free opening afforded by the incision practiced hemostasis is readily accomplished and vital structures are readily avoided. The method employed is to be commended from every standpoint, and to those who have seen its practical application and its results it constitutes a notable advance in surgical technique.

THE SURGICAL TREATMENT OF EXOPHTHALMIC GOITRE.

If it be accepted that the symptoms which constitute Basedow's disease are due either to a hypersecretion or perverted secretion in the thyroid gland, and if it be accepted that medical means of cure are as a rule inefficacious, a contention very frequently urged by the surgeons but by no means statistically proven, the treatment of this condition by the removal of as much of the offending gland as can be taken away without exposing the patient to the dangers of myxedema seems entirely logical.

As to the prognosis of medical treatment, a statistical study shows that apparent cure can be expected in not more than 25 per cent of the cases, and that the mortality is somewhere about 25 per cent, these deaths, however, being attributable to intercurrent affections. It may be assumed from these figures that about 50 per cent continue indefinitely with more or less disabling manifestations of the disease and ultimately perish of causes not directly attributable to their chronic thyroid intoxication.

These figures are somewhat deceiving, since the vast majority of cases of slight thyroid intoxication treated by medical men never appear in current literature; moreover, the fulminant and fatal cases are almost universally recognized as unsuitable to operative intervention and are necessarily classed as receiving medical treatment alone.

As to the surgical treatment, sympathetic resection has been practically abandoned, nor has it ever had any great vogue. Among the 76 cases collected from literature there were 12 deaths. There is no evidence that there was a large percentage of cures, and Forgue reports one patient who ten years after this operation became glaucomatous and lost both eyes. He remarked, however, with some satisfaction, that aside from this complete blindness the cure was complete, but observes that a second case was "less brilliant" in its results since the patient died of myocarditis.

The operation of choice is a partial thyroidectomy. Lenormant has collected 666 cases as cured or greatly bettered, 174 slightly improved, or too recently reported to be of service, and 63 resulting fatally from operation—that is, there were 75 per cent of successes.

Cases which were not bettered by operation were usually those treated by ligature or by removal of an insufficient portion of the gland. Recurrences were rare, and were at times characterized by a growth of the thyroid without symptoms of intoxication. More frequently perhaps there was the associated tachycardia, trembling and exophthalmos, superficial hyperemia and sweating, and a pronounced vascularization of the renewed growths which usually accompany hyperthyroidism.

It is universally accepted that the safety of the operation and the completeness of cure is directly proportioned to the timeliness of intervention. Indeed, the belief is becoming rapidly accepted that a hypervascular thyroid accompanied by symptoms of thyroid intoxication, if unimproved by hygienic and medical treatment, should be passed to the surgeon before the cardiac and renal changes have progressed so far as to make any form of intervention dangerous or futile.

Kocher from the prognostic standpoint lays particular stress upon the examination of the blood, a pronounced lymphocytosis indicating a state which, if the patient's condition allows, distinctly calls for surgical intervention. Surgical operation is not to be advised in those cases which exhibit thyroid cachexia characterized by cardiac degeneration, renal and hepatic insufficiency, and pronounced edema, nor is that acute form of the affection characterized by sudden onset and extremely rapid progression amenable to surgical treatment.

Hypertrophy of the thymus has been suggested as a contraindication to operation, and it is noteworthy that Capelle of 22 autopsies upon patients suffering from exophthalmic goitre has observed an enlarged thymus in 21 cases. The diagnosis of this condition, however, may be extremely difficult, nor does it seem in itself a proper contraindication to surgical intervention.

When a progressive thyroid intoxication has reached such a stage as to render surgical intervention dangerous if no betterment follows appropriate medical treatment, the form of intervention usually practiced is that of ligation. The ligature should be made *en masse,* including the superior cornua of the thyroid. Girard holds that thus the vascular and secretory nerves are destroyed. If there be improvement following this operation, or at once if the patient be in condition to react against a more formidable procedure, one lobe or, if there be pronounced enlargement, one lobe and a part of the other are removed, subcapsular decortication being practiced in the posterior portion of the gland that injury of the parathyroids and recurrent laryngeal nerve may be avoided. It is noteworthy that the mortality of the operation is steadily decreasing, incident in part to the increased skill of individual operators, in part to the more careful selection of cases and more rational preparation for operation, but mainly to the fact that medical men are more prone to call the surgeon in consultation before thyroid intoxication has reached the irrecoverable stage.

REPORTS ON THERAPEUTIC PROGRESS.

BRIEF NOTES ON THE TREATMENT OF RHEUMATISM BY BEE STINGS.

Maberly writes to the *Lancet* of July 23, 1910, that in October last he happened to see a patient who three years before had a severe attack of rheumatism which developed into chronic rheumatic arthritis. Almost all known remedies—baths at Buxton, Llanwrtyd, and Droitwich, electricity, massage, and the usual drugs and diets—were tried without success, and he became so ill that although only fifty-five years of age he was pensioned off by the Birmingham Water Department, where he was employed. He steadily grew more helpless, and had long given up all treatment. His legs and arms were flexed strongly, his chin was drawn down almost onto his chest, and he was only able to open his mouth about half an inch. He was never free from pain, and from being a fine and active man he had become a helpless cripple. The writer tried to cheer him, and told him that if he heard of anything likely to do him good he would let him know, and the same evening happened to meet a "bee expert" who said the case was just one for the bee treatment. So arrangements were made to have the patient driven to the house of the writer, and he was given the first application October 30. With the greatest difficulty he hobbled into the consulting-room, his height being only 5 feet 3 inches, so doubled up was he, though his real stature was 5 feet 10 inches. They persevered with the bee treatment, giving him about 18 stings weekly, and in two months he stood 5 feet 5 inches, he could hold his head up and open his mouth fully, and the pains in the joints had almost disappeared.

A second case brought to the writer's notice was that of a man about thirty-five years of age, who had been laid up three times with rheumatic fever for six or seven months each time, and found his joints increasingly stiff with each attack. In his case the bee stings did marvels. He stated that his feet had always been stiff from the first attack, but now he could walk anywhere, and "did about 20 miles every Sunday." He found his ankle movements to be perfect and he stood on his toes quite easily. He stated that he always ate and drank whatever he liked, and whenever he could catch a bee in his garden he did so and put it on. The author visited a number of other cases with the same friend, some of old-standing chronic rheumatism, both in elderly and younger subjects, and

all were doing well, while in nearly all the usual remedies had been tried without any good results.

He selects a few of his own cases for mention as examples of the treatment:

A married woman, aged thirty years, was attacked with rheumatic fever while on a holiday about 20 miles from home. She was brought back delirious in a motor and confined to bed for eight weeks. During the first fortnight her temperature kept between 104° and 105° F., with profuse acid perspirations and very severe joint pains. Endocarditis supervened and left a regurgitant mitral murmur. During convalescence the joint pains were very troublesome, and after trying various remedies without much relief the author persuaded her to allow him to try the bees. Five applications completely relieved her and she has been quite well since.

A young woman aged twenty-five years was attacked with influenza four years ago which left a neuritis of the left arm. This was so painful that she could not even sew with comfort, and if she attempted to ride her bicycle the jar was more than she could bear. She carried her arm in a sling for six months, giving it perfect rest; she also tried electrical treatment, massage, and various ointments, but without any permanent good result. A few months ago the author persuaded her to try the bees, and four applications completely cured her.

A professional violoncellist, aged thirty-five years, in December, 1909, was attacked with influenza, leaving "rheumatic" pains in the joints. Although he advised him to try the bees, the patient had found such good results from certain saline baths on a former occasion that he determined to take a course of them again. During his stay he was attacked with rheumatic fever and was laid up there for some weeks. When he returned the pain and stiffness in his joints were very severe and prevented him fulfilling any professional engagements. On February 27 the writer put 15 bees on him, and on March 3 he played at a concert away from home. He continued the treatment until May 29, altogether having ten applications of bees, and is now quite well. The writer concludes from this that the remedy, if it does not effect a complete cure, gives relief in almost hopeless cases.

In elderly people it is better to start with about six stings for the first three applications, when they may be gradually increased, even up to a couple of dozen. Sickness often supervenes if too many are put on at first. There is a little difficulty for a novice in putting them on, but the author asserts he has perfected a pair of forceps which, while preventing injury to the bees, holds them firmly. The stings should remain in for a few minutes before removing them. In old-standing cases the treatment will have to be continued for many months.

VACCINES IN THE TREATMENT OF VARIOUS BACTERIAL INFECTIONS IN INFANTS AND YOUNG CHILDREN.

SILL writing on this topic in the *Medical Record* of August 6, 1910, reminds us that Ross has shown that there are three classes of indices:

1. Local infections in which bacterial products have not entered the general circulation, and on that account there is no reactive stimulation of the general system.

2. Cases in which the bacterial invasion of the general system is so great that the opsonogenic powers of the system are overwhelmed.

3. Cases of such low vitality that they are not able to react to the stimulating influence of the toxins. It is obvious only in the first group of cases that the treatment by bacterial injections may be expected to give good results. This group of cases include furunculosis, acne, carbuncles, boils, and walled abscesses, and early cases of pulmonary tuberculosis, chronic and acute suppurative otitis media, old unhealed abscess cavities, erysipelas, and gonorrhea. These opsonins are specific—in other words, for each of the

different varieties of bacteria phagocytosis must occur, so that the opsonic index may be very high for one variety of bacteria and low for another; thus, in order to get beneficial results from the treatment of these various infections it is evident that a vaccine must be used made from the same kind of dead bacteria as is found in each infection.

Through the courtesy and interest of Parke, Davis & Co., the author states, he has been abundantly supplied with a variety of vaccines, and has thus been able to treat a variety of infections with a view not only to determine the usefulness of vaccines in these infections in children, but also whether their use was accompanied by any danger or untoward results, as well as to satisfy himself whether or no the stock of vaccines could be used with as great advantage as the autogenous vaccines.

His experience extends over a period of six months, in which time he has treated 49 cases by means of vaccines. Of all these cases he has kept careful notes, and no case was pronounced cured until all signs of any pus or a discharge had entirely disappeared for some time, with no recurrence. Of these 49 cases, 39 were subacute or chronic otitis media, the ears having discharged from a few days to two years, local treatment having had only slight effect. There was one case of erysipelas in a child one year of age and one in an infant eight days old, two cases of multiple abscesses of the scalp, two cases of suppurating glands of the neck, two cases of pneumonia in babies, one case of gonorrheal ophthalmia in a baby of three weeks, one case of acne of eight years' standing.

Of the 29 otitis media cases 28 were cured, 10 improved while under treatment, and one did not improve. Both cases of suppurating glands of the neck and both cases of multiple abscesses of the scalp were cured. In one case of pneumonia the vaccine apparently brought about a rapid cure, as the crisis came on the third day of the disease, and in the other cases there was marked improvement of the symptoms. The erysipelas cases were cured. The case of acne was cured after a period of six months, having received an injection of 800,000,000 staphylococcus aureus each week. Thirty injections were given this case in all.

The case of ophthalmia improved rapidly under 5-per-cent argyrol and gonococcus vaccine, and was apparently cured when last seen.

The earlier the vaccines were used after the discharge from the ears began the quicker was the cure, one or two injections being sufficient in most cases. Young babies seemed to require fewer injections to bring about a cure than older children, especially if the ears had been discharging only a short time, but this was not always the case; some children who had had a purulent discharge for two or three weeks were cured with two injections, and one case of five months' standing received two injections, at intervals of five days, which brought about a cure. Other cases that were subacute, of a few days' duration, required numerous injections; thus a boy ten years of age, both of whose ears had been discharging for three days, showed by culture growth a mixed staphylococcus infection. In this case eleven injections of 400,000,000 each of the combined staphylococcus aureus, albus, and citreus vaccine were given over a period of one month and brought about a complete cure. This boy was run down and ill nourished, which, no doubt, had something to do with the length of time necessary to bring about the cure.

Another case was that of a child three years of age, who had had a purulent discharge from the ear for over a year that had resisted local treatment. In this case nine injections were given over a period of twenty-eight days before all discharge had stopped, and the child was pronounced cured.

Another interesting case was that of a child a year and a half old, whose ear had been discharging for two weeks; this child was suffering from a severe attack of whooping-cough. Culture growth from the

discharging ear showed diphtheria bacilli and the staphylococcus albus to be present. Five thousand units of antitoxin were given, and 400,000,000 staphylococci at six different times were required to bring about a cure. The majority of cases required only two or three injections, and lasted from a few days to two weeks after vaccine treatment was begun.

The method of procedure in each case was to take a culture from the ear by means of a fine cotton applicator. This culture was allowed to grow for twenty-four hours on blood serum in the ordinary culture tube, placed in a thermostat. At the end of twenty-four hours the growth was stained with Loeffler's blue and examined under the microscope, and the vaccine corresponding to the germ found was injected subcutaneously. A variety of bacteria were found, staphylococcus aureus, albus, and citreus combined, or any two combined, or each separate; also streptococci. These bacteria were also found with the influenza bacillus, the hay bacillus, diphtheria bacillus, and others, also the pneumococcus and other cocci.

The majority of cases showed one or more varieties of staphylococci, either alone or with streptococci. The vaccines were given in doses of from 200,000,000 to 800,000,000 staphylococci, from every two or three days to once a week. Streptococci were given in doses from 40,000,000 to 80,000,000 bacteria, in some cases as often as every day, but in most cases at the same intervals as the staphylococci. Pneumococci were given in doses of 40,000,000 every day or two; gonococci were given in doses of from 20,000,000 to 100,000,000 once a week or oftener. The children treated were from a few months to ten years of age; the majority, however, were under five years, and the most of these under three years. The vaccines were given with the ordinary glass hypodermic syringe, previously sterilized by boiling, under antiseptic methods, and the injection was made either in the buttocks or abdominal muscles. The opsonic index was not taken in these cases, and it does not seem to be necessary, as for the ordinary practitioner it is entirely too complicated a proceeding. The clinical symptoms of each case were relied upon to determine the amount of vaccine given and the frequency of the injections. The only treatment in the otitis media cases other than the vaccines was washing the ears out with boracic acid solution.

In a severe case of erysipelas in a baby one year of age the author believes the injection of large doses of streptococcus vaccine was the means of saving the child's life. When first seen, February 21, the erysipelas involved the whole of one leg up to one inch of the knee; the temperature was 104.6° F., and the baby appeared to be pretty sick with more or less prostration and rapid pulse. A fever mixture and cold sponging were given and ichthyol ointment applied. On the 22d the temperature was 103° F., and the erysipelas had extended one and a half inches above the knee. On the 23d the temperature was 103.8° F., and the erysipelas had spread half-way up the thigh; 400,000,000 staphylococci combined were given, with a continuance of the other treatment. On the 24th temperature was 102.6° F.; the inflammation had spread all over the legs and two-thirds of the way up the thigh—in fact nearly to the groin; 40,000,000 streptococci were given and the aluminum acetate solution applied to the leg in the shape of a wet dressing. On the 25th the temperature was 105.8° F., and the erysipelas had spread to the trunk, all the left buttock being involved; 80,000,000 streptococci were given. On the 27th the erysipelas had extended one and a half inches, but looked paler, and was fading on the leg; the temperature was 102.2° F., and the child seemed much better; 80,000,000 streptococci were given. On the 28th the temperature was 101.6° F., and the erysipelas had advanced less than an inch, and the redness on the leg and thigh had practically disappeared; 80,000,000 streptococci were given. On March 1 the temperature was 99.5° F., and the erysipelas had receded about an inch and only a small area

remained. The child looked pale. Forty million streptococci were given and a bichloride dressing applied. On March 2 the temperature was 100° F., and the inflammation had practically disappeared. On March 3 the temperature was normal; the erysipelas had entirely disappeared and the child seemed perfectly well.

Dr. Kerley states in his book that erysipelas is a particularly fatal disease in infants, 95 per cent of the cases being fatal in the new-born, and 50 per cent of his cases occurring under one year being fatal.

The other case of erysipelas was in a small female infant eight days old. It was a streptococcus infection of the umbilical cord. The erysipelas began or was noticed first by the mother about 12 o'clock, and at 2 o'clock he saw the child, who then had a temperature of 102.8° F. The erysipelas involved both vulvæ and extended nearly to the umbilicus. At this time 40,000,000 streptococci were given, and a wet 1-to-5000 bichloride of mercury dressing applied. On the following day, the 29th of March, the temperature was 101.5° F., and the erysipelas had extended half-way down both thighs and over the lower part of the back and buttocks. Eighty million streptococci were injected, and a wet dressing applied as before. On the 30th of March the temperature had dropped to 99.2° F., and although the inflammation had extended slightly toward the knee it looked much paler over the whole area and the child seemed much brighter and better, and there was hardly any discharge of pus from the umbilicus. Eighty million streptococci were given and dressing applied. This case made a rapid and uneventful recovery after this and no more injections were necessary, although the writer fully realized that more cases of this serious infection should be studied and treated with the vaccine before we can say we have a specific for the disease, yet the signal success he has so far had with the use of the vaccine, and its apparent superiority over all other previous modes of treatment, make him feel even now quite confident that further trials will prove to be equally convincing.

Of course, the whole idea of the vaccine treatment is to raise the opsonic index of the blood so that the system may overcome the infecting organism whatever it may be.

The effect locally of a vaccine injection is to cause slight redness and tenderness, which last a day perhaps, and in some few cases two days. There is slight fever in some few cases of 99° to 101° F., which lasts for one and in exceptional cases two days, but no other systemic effect has been noticed except that the child may have malaise for a day following the injection. One case that resisted treatment most stubbornly, being least responsive to the vaccine, was a case of acne. This case was eventually cured after thirty injections, one given weekly.

The experience of the writer leads him to believe we have a valuable and powerful aid to the treatment of various local infections in the use of vaccines, and that our armamentarium in these cases will be materially increased by their use, since of the hundreds of injections he has given no untoward condition has resulted.

THE FINKELSTEIN-MEYER METHOD OF INFANT FEEDING BY "CASEIN MILK."

LEOPOLD in the *Archives of Pediatrics* for August, 1910, recalls that in his contribution to the subject of alimentary intoxication Finkelstein calls attention to the fact that nutritional disturbances in infants are usually due to the sugars and salts in the milk. Fats in the presence of sugars and salts may also cause intestinal disturbances. Casein, according to Finkelstein, has no more ill effect on infants than plain water. Indeed, casein tends to neutralize the fermentation processes caused by the sugars, and for this reason has a certain curative action in intestinal disturbances. These statements are based on both experimental and clinical observations made by Finkelstein and his school. They have shown that salts and sugars may give rise

to dyspeptic stools, fever, loss in weight, and even the severest grades of intoxication in infants, and that these symptoms can be cured by the exclusion of the sugars and salts from the food.

Some months ago Finkelstein and Meyer published a preliminary report of their new food for those infants suffering from disturbances in nutrition. The principle of this food consists in the fact that it contains very little salts and sugars and a large amount of fat and casein.

Following this publication there appeared a paper by Reuss and Sperk from Escherich's clinic in Vienna, in which the authors reported a series of cases fed on this "casein milk" with very good result.

Finkelstein and Meyer have now published their completed work, in which they present their experimental studies and give their results in a series of 150 cases that had been fed on this "casein milk." Their results are brilliant.

During the past six months they have been using this "casein milk" in the babies' ward of the Post-Graduate Hospital in Dr. Chapin's service. Dr. Chapin has reported a few of the cases. A conclusion as to the value of this method of feeding cannot be drawn from their small series of cases. When they have a larger number they hope to report their results. While at the Kinderasyl in Berlin the writer was given the opportunity of treating a number of infants by this method of feeding, and also saw many cases treated by Meyer and Finkelstein themselves. The results, as reported by the authors, are exceedingly good.

The object of this paper is to outline the preparation of this "casein milk," the indications for its use, and the method of its administration, so that this milk may be given a trial in other American hospitals.

Preparation.—Heat 1 quart of full milk to 100° F. Add four teaspoonfuls of the essence of pepsin and stir. Let this mixture stand at 100° F. until the curd has formed (this usually takes about half an hour). Filter off the whey from the curd by means of a linen cloth and hang up the cloth containing the curd for one-half hour in order to be rid of the whey. Then the curd is removed from the linen cloth and is pressed through a rather fine sieve two or three times by means of a wooden mallet or spoon. One pint of water is added to the curd during this process. The mixture should now look like milk and the precipitate must be very finely divided; to this mixture 1 pint of buttermilk is added. Finkelstein and Meyer use buttermilk in the preparation of this food for the following reasons: (1) On account of the small amount of milk-sugar it contains; (2) to obtain the good effects of the lactic acid; and (3) because buttermilk can be kept for a long time.

The composition of this "casein milk" is as follows:

Proteid	3 per cent.
Fats	2.5 per cent.
Sugar	1.5 per cent.
Salts	0.5 per cent.

One quart of this milk contains about 370 calories.

This food is indicated in infants with intestinal disturbances—that is, in cases of enteritis (dyspepsia), atrophy (decomposition), and cholera infantum (intoxication).

"Casein milk" should at first be given in very small amounts in cases of enteritis, and in larger amounts in cases of atrophy, every two or three or four hours. There is usually a loss of weight during the first few days that this food is given. The stools become homogeneous, however, and the temperature, if it has been elevated, drops to normal. After the stools have become homogeneous a small amount of sugar is added to each feeding—at the beginning not more than ½ to 1 ounce for the entire day's feeding. In most cases a gain in weight results after the sugar has been added. Then very gradually the amount of each feeding is increased and more sugar is added. There is considerable difference in the influence on the organism of the different sugars. The writer has shown at Finkelstein's clinic (results not yet published) that a combination of

dextrin and maltose causes the least disturbance in infant feeding, and that lactose should not be used in milk dilutions. Saccharose is much less injurious than lactose.

This "casein" feeding is kept up for weeks or months—until the gastrointestinal disturbance has entirely disappeared and the infant has made a good gain in weight. Then the regular milk mixture is resumed. No cathartics are to be used before or while this feeding is given.

TREATMENT OF RHUS POISONING.

GARDNER writes to the *Medical Record* of August 20, 1910, that he wishes to call the attention of the profession to the *one* remedy in his opinion (used in conjunction with some minor ones), and that is the good old-fashioned lead and opium wash, improved. The improvement is a solution of boracic acid 10 grains to the ounce of distilled water as a base, grs. 5 acetate of lead, and in place of powdered opium the liquor morphinæ sulphatis. This improvement does away with the unpleasant odor and staining properties of the ordinary lead and opium wash. The substitution of the liquor morphinæ sulphatis for the powdered opium and water is not original, the writer states, with himself, the credit, as far as he knows, belonging to Prof. William H. Thomson, of New York.

The directions are as follows: After the initial cleansing of the affected parts with a 1:40 solution of carbolic acid and any good laundry soap, water is not again to be used during the treatment. If for any reason the affected parts have to be cleansed, carbolized oil is to be used, applied on absorbent cotton. Apply the improved lead and morphine lotion on antiseptic gauze, and on parts not convenient to bandage apply the lotion and dust with camphorated stearate of zinc. This dusting powder is not only soothing, but helps to control the oozing, thereby preventing the spreading of the rash. At bedtime advise the patient to wear loose cotton gloves, if for any reason the hands cannot be bandaged. This last measure will often prevent the spreading of the rash to the eyes and genital organs.

Internally the author uses small doses of aconite and gelsemium for the fever and nervous disturbance, and calomel, ipecac, and bicarbonate of sodium, following the latter with a glass of water before breakfast. The author sometimes adds to the same quantity of Epsom salts an equal amount of cream of tartar. Of course if these quantities cause the bowels to move too freely, reduce the amount so that the patient will have two or three good movements a day.

In conclusion the author states that in a practice of over twenty-five years in a part of the United States where poison-ivy rash is very common he has met with few cases that the treatment as outlined has not speedily and almost painlessly cured; and this, too, after most of his patients have used the ordinary home remedies, such as salt water, white lead, spirit of nitre, aqua ammoniæ, etc. It is the opinion of the writer that the failures that have been charged to acetate of lead have been due to the fact that the solutions have been applied entirely too strong, thereby causing a great deal of pain and an increase of the inflammation of the skin.

THE TREATMENT OF ENURESIS BY RE-EDUCATION.

HERRMAN writing in the *Archives of Pediatrics* for August, 1910, tells us that three years ago, in a study of a series of cases of tic (see *Archives of Pediatrics*, June, 1906), he was struck by the frequency with which enuresis occurred in these patients or in other members of the same family. Oppenheim has also called attention to this fact. It occurred to him at the time that the underlying cause might be similar, and on that assumption he has employed a simple method of treatment which he briefly describes later.

There can be little doubt that the vast majority of the cases of enuresis represent

a pure functional neurosis, for we rarely find any marked changes in the urine or in the genito-urinary tract. We are dealing primarily with a psychical disturbance, which may very well be compared to stuttering. In the latter the vocal and respiratory organs are normal, but the patient does not know how to use them properly; he is like an unskilled musician who has a first-class instrument but does not know how to play upon it. The patient with involuntary micturition has perfect organs, but lacks the proper control of the mechanism, and like all patients with tics he lacks especially the power of inhibition. It therefore seemed to him that a method which had been successful in the treatment of tics might be equally successful in the treatment of enuresis. As is well known, the reëducational treatment of tics consists in having the patient perform voluntarily a number of times the muscular action which he performs involuntarily and unnecessarily—that is, the so-called method of conscious repetition of Brissaud. For example, if the patient has a twitching of the eyelids the exercises consist of voluntarily opening and closing the eyes a certain number of times, usually before a mirror. Scripture puts it as follows: "The tic is carried out by mental activity of less than full consciousness; the entire act may have become completely subconscious. Perfect voluntary imitation of the act trains the mind to doing exactly the same act consciously. Thereafter the act is no longer an involuntary subconscious one, but a voluntary conscious act. The tic has been killed."

Applying this method to the treatment of involuntary micturition, the writer has had the patient urinate at regular stated times, but every time he urinates he is directed to void a little, say two drachms, and then stop; then void two drachms more and stop; and so on until the bladder is emptied. In this way he exercises the mechanism which controls urination; he trains and educates himself in the voluntary execution of the act. After this has been done two or three times under the direction of the physician the patient can carry it out himself.

SALICYLIC IONIZATION IN ACUTE ARTICULAR RHEUMATISM.

Some remarkable cases of extremely rapid cure of acute rheumatism of the joints after treatment with intra-articular injections of salicylate of soda by the electrical method are recorded by WULLYAMOZ, of Lausanne. If the results are confirmed in a large number of cases, we have here what Wullyamoz calls a "treatment by assault" for this condition. The first observation relates to a patient who had suffered severely on three previous occasions from acute rheumatism, and had been treated by the routine drug method with salicylates. At each attack the treatment lasted from six weeks to three months. In his latest illness the salicylate treatment produced no amelioration to speak of, and at the end of a month the patient could scarcely move, and showed an icteric tint and signs of dyspnea. A cataphoretic course of treatment was then determined upon. The whole surface of the body was first washed so as to relieve the pores of any grease that might oppose a resistance to the ions and the electrical current, and on the following day the first sitting was given. Large electrodes of 1 meter in length and 20 centimeters in width were employed, and over the whole extent of the one which served as the cathode was spread, not a solution of salicylate of soda, but, for the sake of simplifying the procedure, the powdered form of that substance. This was rubbed over the surface with the hand in such a fashion as, with the humidity of the electrode, to form a paste. The cathode was then applied to the leg, the base of the electrode resting upon the swollen instep, and the upper part covering the hip region, while the anode was placed on the posterior side of the leg. The upper extremity was dealt with in the same manner. A sitting of one-half hour was given for each of the

affected limbs in turn. Two days afterward the swelling had left the knee and the right hand, but the left foot was somewhat painful. Another sitting was given, and after a further forty-eight hours the patient was able to walk without assistance and to obtain a good sleep, which had been denied him for fifteen days previously. The cure was absolutely complete ten days after the commencement of cataphoretic treatment, and after five sittings.

In the second case the rheumatism had invaded both wrists and both feet. Friction and the envelopment of the joints with salicylic ointment were at first prescribed, but with little effect, and at the time that it was decided to apply the cataphoretic method the patient was in severe pain and had a high temperature. Each member was treated for thirty minutes, as in the preceding case, making a total sitting of two hours. On the following day the pain had greatly lessened and the temperature had fallen. Two days later the patient was able to walk and use his hands, from which the swelling had disappeared. Cure was practically accomplished within five days from the commencement of the treatment, and with four sittings.

The third patient had also been a previous sufferer from acute rheumatism, and in the present instance the attack had lasted for eight days, during which the usual drug treatment had been without avail. The pain was violent in the joints and back, and there was also some pleural effusion. Cataphoresis was practiced (half an hour for each member, 160 milliamperes), and on succeeding days 200 milliamperes were passed without pain. The final disappearance of all pain and dyspnea took place within seven days of the commencement of treatment, and with seven sittings.

The fact upon which the author lays particular stress is the rapid and definite fall of the fever in these cases. In the second of them the temperature fell from 39.6° to 37.1° C. in less than twenty-four hours; and in the third, from 38.6° to 37° C. in less than three hours. As to the manner in which this medicamental electrolysis effects its results, the author makes the suggestion diffidently that in the tissues the electrical current, partly through the agency of the tissues themselves and partly through that of the introduced ions, forms a series of groupings which he calls x, and which, provided with a certain change, discharge by their contact groupings of morbid elements or microbes of equal charge but of contrary sign, these phenomena being multiplied very rapidly in a unit of time. But microphysics has still a great deal more light to cast upon these unexplained biological and therapeutical effects. —*British Medical Journal,* Aug. 13, 1910.

WHAT LACTIC ACID BACTERIA ARE SUPPOSED TO DESTROY.

KENDALL in the *Boston Medical and Surgical Journal* of August 25, 1910, tells us that we may summarize the effects of lactic acid therapy as follows:

1 Objectionable proteolytic activity, resulting in the absorption by the host of aromatic substances derived from protein decomposition by the action of proteolytic bacteria, may take place in the intestinal tract.

2. These aromatic compounds may be formed in the small or large intestines by the facultative or obligate proteolytic organisms.

3. An excess of protein in the diet of the host, or any factor causing stasis or impaired absorption of protein, appears to be the direct cause of this condition. The result is an unusual amount of available food which stimulates the development of these proteolytic intestinal organisms.

4. The addition to the diet of easily fermentable carbohydrate, together with the restriction of the protein, is of material assistance in reducing the output of these putrefactive products in many instances.

5. The beneficial action of the carbohydrate is a twofold one: First, the character of the metabolism of the facultative organ-

isms tends to change from the putrefactive to the fermentative type, eliminating from the urine the putrefactive products referable to their activity; and secondly, the lactic acid bacilli, either those given by mouth or those normally present in the intestinal canal, or both, proliferate rapidly, forming considerable amounts of lactic acid from this carbohydrate and inhibiting the further development of the obligate proteolytic organisms by rendering the medium in which they are growing unsuitable for continued development.

6. The proteolytic bacteria may be producing their harmful effects either in the small or large intestine; in the former case, the introduction of organisms of the Bulgarian type may reasonably be expected to be of benefit, since we have seen that they tend to localize themselves in the small intestine. If, however, the proteolytic process is of large intestinal origin, the normal lactic acid bacilli of the acidophilus type are indicated. If there is reason to suspect that these normal intestinal lactic acid bacilli are enfeebled in their action, or absent, it will be necessary to feed fresh cultures by mouth, or introduce them per rectum.

7. While the primary object of introducing lactic acid bacilli is to inhibit the objectionable activity of proteolytic organisms, it is possible, and, indeed, experiments seem to indicate, that in addition to the formation of lactic acid other products associated with their development may be formed which also act beneficially. The nature of these products and the character of their beneficial action, however, are not definitely known.

In young children, more particularly those fed upon cows' milk, we may conceive of three distinct types of bacterial activity of an undesirable nature in the alimentary tract:

1. A true proteolytic type, characterized by the formation of putrefactive products, such as indol, phenol, and oxyacids.

2. A mixed putrefactive and fermentative process, in which proteolytic and facultative organisms act symbiotically, producing through their symbiotic activity considerable amounts of gas and destruction of protein (casein). An example of this kind has been mentioned in which the colon bacillus and an organism of the subtilis group energetically destroyed milk.

3. A true fermentative type, in which there is an unrestrained overgrowth of true lactic acid bacilli. Salge has shown that in certain of his cases an enteritis resulted when the normal intestinal lactic acid bacilli of the acidophilus type proliferated to an unusual degree.

TREATMENT OF THE ACUTE STAGE OF INFANTILE PARALYSIS.

HERNAMAN-JOHNSON in *Folia Therapeutica* for October, 1910, says that in his opinion the principal aims to be kept in view in the treatment of the acute stage of infantile paralysis are as follows:

1. To assuage pain if this be severe. The application over the painful part of the spine of a linseed poultice containing a little mustard is most efficacious. Morphine may be necessary. The common prejudice against giving this drug to children should not cause us to withhold it where to do so is cruel. In the vast majority of cases 1/40 grain hypodermically may be given with safety to a child of two. After the first violence of onset is over, bromides will usually be found sufficient to control any remaining irritation. Of course, if sedative drugs can be avoided, it is so much to the good, as they interfere with eliminative treatment.

2. To diminish blood-pressure and lessen the force and frequency of the heart's action. For this purpose—after the initial dose of calomel—aconite and spiritus ætheris nitrosi seem to be the most suitable agents.

3. An attempt should be made to eliminate the toxins circulating in the blood. Citrate of potassium internally and frequent hot baths will stimulate kidneys and skin respectively.

A mixture such as the following may

therefore be prescribed and continued for some days:

℞ Tinct. aconiti, m. j;
Spt. æther. nitrosi, m. v;
Potassii citratis, gr. x;
Syr. limonis, m. xv;
Aquæ, q. s. ad f℥ij.

Sig.: f℥ij every two hours in water.

The above quantities are suitable for a child from two to three years old.

4. The possibility of acting directly on the cord should receive consideration. (*a*) We may lower the intrameningeal pressure by lumbar puncture. Ager is fully convinced that it is quite as useful in infantile paralysis as in meningitis. Certainly, if the cornu cells are undergoing pressure-atrophy, this procedure offers a prospect of relief. (*b*) Certain writers have lately stated that the cerebrospinal fluid can be to a certain extent disinfected by the administration of "urotropin" (hexamethylentetramin) and its allies. It is said to be of use in meningitis; and if the disease we are considering is caused by pathogenic organisms in the cord, there is no reason why urotropin should not be tried here also.

5. It must not be forgotten that acute infantile palsy occasionally threatens life. A tendency toward hyperpyrexia with stupor should be met with tepid sponging, or, if necessary, cold baths. Cardiac failure may call for the exhibition of stimulants. Strychnine should be avoided; sparteine and digitalis are indicated (Ager).

At the beginning of his paper the author quotes such authorities as Goodhart, Osler, H. Campbell Thomson, Sir William Gowers, and Purves Stewart as regarding as useful drugs ergot, digitalis, and belladonna; also that counter-irritation is severely condemned by so great a physician as Professor Osler. These opinions seem to him to call for some comment.

The administration of ergot is advised by Goodhart and Purves Stewart; condoned, if not actually recommended, by Gowers. Yet the author believes it is bound to be mischievous, not only, as Ager suggests, by its tendency to upset an already weakened stomach, but by reason of its pharmacological action. That this drug has any specific effect on bleeding vessels in the spinal cord is more than doubtful; whereas there is no doubt at all that it raises the general blood-pressure, and thus far, at any rate, tends to favor hemorrhage. Both Hale-White and Cushny are of this opinion. The same arguments hold with equal force against the routine use of digitalis. As to belladonna, its tendency to decrease the activity of the sweat glands and accelerate the cardiac rhythm renders it an unsuitable drug to employ in this illness.

Counter-irritation.—Osler, it will have been noted, condemns this practice as "useless and cruel," alleging as his reason that the damage is already done when the physician arrives. But does the attack necessarily end with the first onslaught? From this ***ipse dixit*** there are those, almost as eminent, who differ radically. Ager, for example, states that there is considerable danger of relapse. Arguing from observations of pneumonia—in the writer's opinion an analogous ailment—this would seem inherently probable. Even if it were not so, however, we have still to consider the value of counter-irritation as an aid to repair.

It has been proved that stimulation of certain skin areas produces a beneficial effect on related deep structures, when these are the seat of inflammatory processes—this effect occurring reflexly through the central nervous system. As a practitioner who has seen in the course of the last six or seven years a large number of cases of pneumonia, both during naval service and in subsequent general medical work ashore, the author states he can bear personal testimony to the value of the old-fashioned mustard poultices; and while he agrees that to blister and cauterize severely a child suffering from acute infantile palsy may be a questionable proceeding, he thinks a mild degree of cutaneous stimulation over the spine must undoubtedly prove beneficial.

There remains the question as to when active treatment, in the shape of massage, electricity, etc., should be commenced. As in the case of fractures, we must endeavor

to strike a happy medium between unduly irritating damaged tissues, and—no less untoward result — permitting inactivities, primarily functional, to assume an obstinate or even a permanently incurable nature. Much, of course, depends on the violence or otherwise of the initial disturbance. In cases of moderate severity, at least a week should elapse before any treatment to the paralyzed muscles is begun. When in doubt, it is better to err on the side of delay; for even muscular manipulations, distant as they may seem to be from the site of inflammation, have a marked action on the cord by reason of the impulses conveyed by the still intact sensory nerves.

SENSORY CHANGES IN THE SKIN FOLLOWING THE APPLICATION OF ETHYL CHLORIDE.

FRANZ and RUEDIGER in the *American Journal of Physiology* of November 1, 1910, reach the following conclusions:

Ethyl chloride is not only an analgesic, but also an anesthetic.

The anesthetic effect is of short duration, while that of analgesia is relatively persistent.

The sensibility of the hairs is affected in much the same way as the sensibility to touch and pain. The sensation of lightly brushing them disappears for only a short time, while those for pain and for pressure on traction do not become normal for a much longer period.

The differences in the reappearance of the touch-like and the pressure-like and pain sensations from the stimulation of the hairs indicate that the hairs have two distinct sensory end organs for the appreciation of stimuli, and they contradict the assumption that the traction sensations are only exaggerations of the touch-like sensations obtained by lightly brushing the hairs.

The variation in temperature sensations is similar to that obtained on section of a nerve and its subsequent regeneration, viz., on the part acted upon by the ethyl chloride the hot and cold stimuli, when they are first sensed, are appreciated as warm and cool rather than hot and cold. The results of the experiments do not indicate any difference in the nerve supply for these kinds of sensations.

THE SECRETION OF THE INFUNDIBULAR LOBE OF THE PITUITARY BODY AND ITS PRESENCE IN THE CEREBROSPINAL FLUID.

Writing in the *American Journal of Physiology* of November 1, 1910, CUSHING and GOETSCH contribute a research on this topic. They state that the object of their communication is to call attention to the presence of a substance in the cerebrospinal fluid which gives the same reactions as extracts of the pars nervosa itself, indicating in all probability that the active principle long recognized as being confined to this anatomical subdivision of the gland is actually secreted into the ventricular cavity.

This would seem to establish the theory that the hyaline bodies of the pars nervosa, regarded by Herring as products of secretion of the posterior lobe—a view supported on experimental grounds by the authors—actually discharge, as their histological appearance suggests, into the third ventricle and represent the source of the active substance resembling pituitrin in the cerebrospinal fluid.

THE INFLUENCE OF ALCOHOL UPON NITROGENOUS METABOLISM IN MEN AND ANIMALS.

In the *American Journal of Physiology* of November 1, 1910, MENDEL and WARREN record a research on this subject and give the following summary:

A study of protein metabolism and utilization, and especially the partition of nitrogen in the urine, under the influence of alcohol has been carried out on man and dogs under fixed and comparable conditions of diet. In man the doses used were moderate—*i.e.*, 500 calories daily in the form of alcohol distributed in six portions. With the animals a range of dosage leading to distinct intoxication was employed.

The findings in general were as follows: There is no pronounced disturbance in the

alimentary utilization of the foodstuffs. Moderate doses exert a protein-sparing action, which is succeeded by loss of nitrogen when larger quantities of alcohol are administered. The partition of urinary nitrogen remains remarkably unaltered with the exception of an increased elimination of ammonia-nitrogen (accompanying other evidences of perverted metabolism as indicated by the appearance of optically active [levorotatory] compounds in the urine) following "toxic" doses, and a higher output of purins. The theoretical significance of the latter, which affects both the endogenous and exogenous factors, is discussed at some length; and its bearing on the assumed nutrient properties of alcohol is indicated.

The most significant impression, perhaps, which the analytical data afford is the absence of pronounced alterations indicative of markedly disturbed protein metabolism, even when comparatively large doses are continued for days and weeks. This has been interpreted as another evidence of the "factor of safety" in metabolism.

URIC ACID IN GOUT.

MAGNUS-LEVY in the *American Journal of the Medical Sciences* for November, 1910, in writing on this topic says that the two drugs which are the most efficacious in the paroxysm, colchicum and salicylate, behave entirely different as regards the elimination of uric acid. Salicylates in sufficient doses increase the output of uric acid materially, by half a gramme and more daily. This effect, however, seems to disappear within a few days. Colchicum, which no doubt is the stronger remedy, produces no change, or if so, it diminishes the quantity of uric acid elimination. The author does not believe that these two drugs, the chemical effects of which are so different, owe their efficacy to the same pharmacological action. One should try to define the mechanism of their action. Setting aside their soothing capacity, the author discusses only their action upon the uric acid within the body.

If, according to Pfeiffer's opinion, the attack were a process of solution and removal of urates, one could conceive that salicylates favor the elimination, since increased uric acid output follows the administration of these substances. But we do not know whether this increased output originates from the deposits. Even healthy persons when taking salicylates show a slight increase of uric acid elimination. Comparative experiments with this remedy ought to be made on a large scale upon healthy and gouty people.

As to colchicum, one might think that it inhibits the process of solution, thus putting an end to the inflammation and to the paroxysm. Its effect is certainly more rapid and more intense than that of sodium salicylate. If this conception were right the colchicum would be only a palliative for the attack, while the salicylates, in spite of their slow action, would be the preferable remedy. It is well known that colchicum is useless in chronic gout. If the attack be interpreted in the sense of Garrod, the efficacy of both drugs would have to be explained otherwise. A discussion of this subject bears as yet the character of mere conjecture. Therefore the author does not wish to enter into details, but believes that these ideas were worth mentioning in order to encourage investigations on these points.

Alkalies and acids are not given during the attack, at least not in large quantities. However, considering the importance of these substances in chronic gout, their application should be tried and observed during the paroxysm also. In recommending them the author does not expect any therapeutic effect. Indeed, in one of his patients the largest doses of hydrochloric acid did not influence either the pains or the inflammation, which is contrary to the results observed in the experiments of Loghem. In administering alkaline carbonates during the attack he does not expect a curative effect either. He merely thinks that the comparative investigation of the action of acids and of alkalies during the attack should also throw some light upon their action in the chronic stages.

In the therapeutics of chronic gout, restriction of meat in the diet has been in use since olden times. This treatment is older than our recent knowledge of uric-acid metabolism. In lessening the formation of exogenous uric acid, we only practice to-day what the old physicians practiced with less precise ideas. However, the extremists of to-day do not even go so far as to forbid meat entirely. Empiricism shows that the disadvantages induced by an exclusive lactovegetarian diet prevail over the benefits which could be expected from a diminished formation of uric acid. Generally we prescribe a diet poor in purins. Investigations of the purin metabolism during years of strict adherence to such a diet will teach us to indicate its application with more accuracy. Repeated analyses of the purin compounds in the blood are needed as well as balances of the purin intake and output, and also repeated investigations of the behavior of ingested nucleic acids. Hospital patients are not very well fitted for such researches, which have to be extended for years. It is fortunate that wealthy patients of to-day are inclined to enter the clinics and sanatoria, and willingly to undergo longer observation. They have an appreciation of the importance of such investigations. However, it will take a decade at least before sufficient data concerning the behavior of uric acid in the urine, blood, etc., collected from a sufficient number of patients, will be at our disposal. We can look forward to this time with great hope.

Of all remedies deemed useful in chronic gout, alkalies have for centuries been applied more than all others. Two theories as to their value have existed. Regarding the first, it was believed that alkalies dissolve the concretions of urates within the body. This idea has been entirely refuted by modern research. The second quality ascribed to the alkalies was their power of facilitating the output of uric acid. This surely should be of benefit. But experiments carried out in this direction do not speak at all in favor of the conception. In therapeutics, however, the first principle for the practitioner as well as for the scientific observer is to note and to judge therapeutic effects with impartiality, leaving aside both prejudice and theory. If empiricism should speak in favor of the alkalies, another theory is required, without need of change in therapeutic treatment.

CHOLELITHIASIS.

In the *Boston Medical and Surgical Journal* of October 27, 1910, CHASE has this to say about the treatment of this state: First and foremost it should be understood that stones in the gall-bladder probably cannot be dissolved by the administration of medicine. Certain experiments have yielded just sufficient results to lead the hopeful to believe that time and perseverance in the use of certain agents may accomplish this desired result, but abundance of clinical experience fails to prove that such is the case. We cannot in any case guarantee to ward off or delay an attack of colic, yet in many cases it certainly seems as if such result is attained, as there is no recurrence for years. Confinement to bed after an attack of colic until inflammatory conditions have subsided should be insisted upon. Kolisch believes that by careful attention to diet, medication, etc., and abstinence from sports and other forms of violent exercise for one year after the colic, latency of gall-stone disease is frequently obtained. As to medicinal agents for the gall-bladder conditions and the usual digestive disturbances, the author asserts he knows of none better than some such combination as that recommended by Billings, as follows:

℞ Sodii salicylatis, 1.0;
Sodii phosphatis, 2.0;
Sodii sulphatis exsic., 6.0.

M. Sig.: 3ss to 3j in glass of hot water thirty minutes before meals.

The general attitude of both physicians and surgeons regarding operative procedure in most cases of cholelithiasis is too well fixed to warrant much discussion. Those physicians, however, who feel it their duty to advise operation in every case as soon as the diagnosis is made, and who have not

done so, may find some consolation in the statement by Richardson: "I have not a few patients in whom I know gall-stones to exist, and in whose cases I have not as yet advised operation. Knowing, however, to a certainty that stones are present in the gall-bladder, knowing also the precise anatomical conditions present, the author is prepared to advise operation the moment the first symptom of impaction appears, unless this impaction should be of the briefest and most trivial character."

THE TREATMENT OF ARTHRITIS DEFORMANS.

In the *American Journal of the Medical Sciences* for November, 1910, SKINNER as to the general routine treatment says that in order to get the most out of the various remedial measures, it is necessary that they be applied with intelligent system, and a routine standard is necessary as a point of departure; this can be modified to suit the individual peculiarities of the various types of the disease, and the variations in the patient's condition from week to week. That which has given the author the most satisfaction is as follows:

1. Rest in bed for at least ten hours out of the twenty-four.

2. A diet as generous as can be digested and assimilated by the individual patient, without producing putrefaction or fermentation.

3. From 1/30 to 1/40 grain of strychnine sulphate, and 2 or 3 grains of ferrous iodide, three times daily, half an hour before meals; and in emaciated cases from 1 to 4 drachms of cod-liver oil, after meals.

4. A dose of some one of the various mineral waters, before breakfast, every two or three days, if constipation is present.

5. A body dry hot air treatment two or three times weekly.

6. Central galvanization once or twice weekly.

7. A general application of mechanical vibratory stimulation two or three times weekly.

8. A static electric application at least once every day, consisting, in acute cases, of the Morton wave current over the affected joints or spine, and in the chronic cases of long, thick sparks to the affected joints one day and the Morton wave current localized over these joints the next. In some cases one of the high-frequency currents, applied either locally or generally, may advantageously replace some of these static applications, or be added to them.

9. A hot and cold douche to the spine two or three times weekly.

This scheme can be added to or otherwise modified, so that the emphasis of the weekly schedule can be laid upon any measure which may be indicated in a given case.

Relief of Pain.—One of the most troublesome symptoms in severe cases, as regards management, is the constant, harassing pain in the joints and nerve trunks. The majority of these patients have become so habituated to pain that they bear a moderate amount without much complaint, but sometimes severe exacerbations will occur, lasting for hours, days, or weeks, which demand attention. The remedial measures already discussed will, in the course of their application for the condition, *per se* eliminate a good deal of it, and as the disease improves the pain lessens proportionately, but the pain of these exacerbations frequently demands direct and immediate relief.

Physiological Therapy. — Among the physiological measures the writer has already mentioned static, high-frequency, and galvanic electricity as being more or less effective in this condition; to these should be added dry hot air, the electric arc and incandescent lights locally applied, the hot-water bag, and hot fomentations. In some cases an ice-cap or piece of flannel wrung out of cold water wrapped in three or four thicknesses about the joint and covered with oiled silk will give more relief than anything else.

Bier's Hyperemia.—Artificial hyperemia by the constriction method has never given the author any help, he asserts, in connection with any phase of this disease that he could not have secured just as well with

something else, and he has practically abandoned its use in the treatment of it.

Drugs.—The old familiar chloral, camphor, and aconite mixture, and the tincture of iodine externally, have given him good results in some cases.

If physiological measures and external applications fail, drugs must be resorted to, and by reason of the inefficiency of those permissible, this subject may be dismissed very briefly. Opium, or any of its derivatives, is inadvisable because of the chronic character of the trouble, because this drug loses its influence in a few days unless given in increasing doses, and because of its evil effects on the system at large. The author has occasionally given coal-tar derivatives, but they also produce undesirable effects upon the metabolic and circulatory functions when continuously administered in effective doses. He has, however, used salicyl compounds and pyramidon with considerable satisfaction, in many cases. The tinctures of hyoscyamus and gelsemium are sometimes helpful in relieving the pains, in the nerve trunks particularly.

Another fairly frequent cause of pain when the larger joints are involved is spasm of the controlling musculature, occurring during sleep. As soon as the patient relaxes into sound slumber he is awakened by excruciating pains and finds the affected muscles strongly contracted. This sometimes recurs persistently enough to interfere with the securing of a sufficient amount of sleep. Strontium bromide in 20- or 30-grain doses, repeated hourly until the condition is relieved or until three doses have been taken, will usually give good results, and patients stand its continued administration, according to the experience of the writer, considerably better than they do that of the sodium and potassium salts.

A mechanical procedure which frequently proves helpful consists of bandaging the affected muscles snugly (not tightly enough to interfere with the circulation) when the patient prepares for the night. This will sometimes prevent the spasm from occurring at all.

GASTRIC AND DUODENAL ULCER.

PALFREY summarizes recent literature on this subject in the *Boston Medical and Surgical Journal* of October 27, 1910. He reminds us that in the discussion following Lenhartz's report and Von Leube's reply at the Congress in 1909, Müller and Von Tabora expressed themselves unfavorably to Lenhartz's immediate feeding. Von Krehl, Gerhardt, and Stintzing expressed favorable impressions from their experience with Lenhartz's methods. Moritz recognized the Lenhartz treatment as of value, showing that the Von Leube treatment was not the only way of accomplishing results, but expressed a preference for the Von Leube treatment as somewhat safer.

The Lenhartz method has won for itself a place in the treatment of gastric ulcer. It is true that the objections to that part of it which deals with the giving of nourishment immediately after hemorrhage may have to be reconsidered on account of the occasional untoward results that have been reported. But at least it has called attention to the undesirability of the prolonged underfeeding practiced especially by physicians who have carried Von Leube's principles to an extreme not countenanced by Von Leube himself, by undue prolongation of the period of rectal feeding. Lenhartz's diet must not be taken as an invariable one, but undoubtedly, as Lambert and others have recognized, is to be varied to some extent according to local habits of diet and to individual peculiarities of patients, yet such variation can be readily affected without in the least changing the application of underlying principles. It is true that the Lenhartz treatment has not been proved to be actually better than the Von Leube treatment, and it may be that combinations of the two, such as Senator's and Zweig's, may be better than either, but at least we are now provided with a choice of treatments. When one treatment fails, as either must do in some cases, the other may be instituted in its place instead of resorting to untried expedients.

Senator aims to avoid the possible me-

chanical irritation of milk curds and at the same time to secure combination of free acid and adequate nutrition immediately after hemorrhage by the use of gelatin and of cream and butter. He begins treatment with a warm 10-per-cent solution of gelatin, sweetened and flavored with lemon, a tablespoonful every hour or oftener, and by giving in the first twenty-four hours 30 grammes of fresh butter and ¼ liter of cream, the butter in frozen pellets, and the cream beaten, with or without freezing. The blood still remaining in the alimentary tract is supposed to furnish sufficient protein, but a small amount of albumin is sometimes given in addition. Later the butter may be partly replaced by olive oil or almond milk. While this diet is small in bulk, its acid-binding power and its caloric value are relatively high.

Articles describing treatment of gastric ulcer have also been written by Rosenfeld, who emphasizes the value of fats, especially cream, and increases or diminishes the relative proportion of albumin or carbohydrate according as hyperacidity or hypoacidity is present; by Sternberg, with emphasis upon finely divided, mechanically non-irritating foods, the preparation of which he describes at length; by Linossier and by Rochester, who describe methods based upon the Von Leube method; and by Thomson. Few writers upon medical treatment have tried to distinguish between gastric and duodenal ulcer, and even those who have attempted the distinction have not modified their treatment when the ulcer was believed to be duodenal and not gastric.

A number of accessory measures in the treatment of gastric ulcer have been discussed, notable among which is the olive oil treatment, first advocated by Cohnheim in 1902. Difficulty has been encountered in persuading patients to take the olive oil. On this account Senator, Bloch, and others have substituted oil of sweet almonds or almond milk (a tablespoonful of powdered sweet almonds to a glass of hot water, emulsified, followed by peppermint, if necessary) or the following prescription of Bloch:

℞ Tinct. belladonnæ, f℥j;
Olei amygdalæ dulcis, f℥j;
Vitelli ovi, j;
Aquæ, q. s. ad ℥j.
M. Ft. emulsio.
Sig.: One tablespoonful three times a day.

Kohler has given olive oil in gelatin capsules of 3 grammes each—six to ten a day. Rutimeyer has reported striking results from the use of olive oil 100 Cc. every morning in 100 cases. Borbjaerg has found the effect of this increased by the suspension in it of 10 grammes of bismuth.

The value of bismuth has long been recognized from its power of coating over the surface of an ulcer. But since nitrite poisoning has occurred in a few cases, attempts have been made to find a substitute. Meyerle has used bismuth subcarbonate with satisfaction, also escalin, a preparation of finely divided aluminum devised by Klemperer, recommended also by Jacobson.

Hort in England and Katzenstein and Fuld in Germany have treated cases by means of horse serum prepared to supply the theoretically deficient bodies which are supposed after Weinland normally to combat gastrolysis and autodigestion of the stomach. The results of the former, however, are not conclusive, and those of Katzenstein and Fuld have not yet been formally reported; judgment upon this method must, therefore, be reserved.

To stimulate mucous secretion as a possible protection to the stomach, Kaufmann has reported benefit from the use of silver nitrate, either ½-grain doses internally or by lavage with 1:2000 solution. Ewald gives a drachm of 1:1500 solution three times a day in certain cases. Surmont and Dubois have shown that in animals bismuth has a marked effect in increasing mucous secretion.

To counteract hypersecretion Von Tabora recommends the continued use of atropine subcutaneously. Petri has shown that solutions of hydrogen peroxide have a powerful effect in reducing acidity; he gives 1 to 3 Cc. internally in 200 to 300 Cc. of water in the morning, or practices lavage with a ¼- to ½-per-cent solution.

Ewald and Bourget support the use of a gelatin solution containing ferric chloride, given either by mouth or by tube. Bourget also uses soft tablets prepared as follows: Gelatin, water, and glycerin, 100 Cc. of each, are dissolved with gentle heat; 50 Cc. of solution of ferric chloride is added with stirring; the mixture is then allowed to cool and solidify in tablets of 1 Cc. each. Bourget's treatment consists of a diet of milk and zwieback or rice given at 8 A.M., 12 M., and 6 P.M. Two or three hours after each meal is given a ferric chloride gelatin tablet, followed in half an hour by sodium bicarbonate solution.

NITRITES AND DIGITALIS IN ANGINA PECTORIS.

HERRICK in the *Journal of the American Medical Association* of October 22, 1910, refers briefly to certain fallacies concerning the use of nitrites and digitalis.

The nitrites have, especially of late, been held by some in less repute than formerly, because they fail completely in some instances to relieve or ward off the attacks. Others seem so convinced of their efficacy that, when in a case of supposed angina the nitrites fail to relieve the suffering, and to relieve it promptly, they conclude that they are dealing with something different from true angina. Now, the truth seems to be that nitrites in some cases give most prompt, marvelously prompt, relief. The testimony of many physicians is available on this point. It is hard to understand, then, how some good men—Romberg, for example—regard this remedy as either of no benefit or of very insignificant value, at least during a seizure. Unless convinced by repeated trials as to its uselessness in the attacks, no patient should fail to keep in his pocket either the pearls of nitrite of amyl or the pill or tablet of nitroglycerin, gr. 1/100 to 1/50. Some attacks are surely cut short by the use of these remedies, and often the patient has a slight warning of the onset, and the timely use of the drug may prevent a paroxysm.

No matter how strong the prejudice against the use of digitalis in cardiac hypertrophy and general arteriosclerosis may be, no matter what may have been said against its employment in weakened myocardial states, there can be no question that in some cases of angina—not easily described—this drug does more good than all the iodides or nitrites.

Herrick's views may be summarized by making the statement as a series of negations:

1. With "true," organic cardiovascular angina pectoris there cannot always be made out peripheral arteriosclerosis, cardiac hypertrophy, and high blood-pressure.

2. The finding of aneurism or lesion of the aortic valves does not exclude angina, but rather argues in its favor.

3. The attacks are not always few in number and brief in duration; they do not occur solely after exertion.

4. While the prognosis is grave, life is not necessarily limited to a few months.

5. The disease is by no means to be excluded because the symptoms are found in a woman, even in a nervous or hysterical woman.

6. The pain is not necessarily severe; it may be mild or even lacking; its radiation is variable.

7. The statement that the patient is always conscious, that he is always immobile and erect, must be modified so as to read "usually" instead of "always."

8. Eructations or vomiting during an attack do not argue conclusively against the cardiovascular origin of the angina.

9. It is not correct to look on the nitrites as of no benefit in relieving symptoms; nor, on the contrary, is one justified in concluding that a case unrelieved by nitrites is not angina.

10. Digitalis is not necessarily contraindicated; it is often of very great value.

Closer observation of the atypical as well as the typical cases, with collocation of the results with those of anatomical and experimental studies, will lead to unifying knowledge concerning the pathogenesis of this disease, to greater precision in its recognition, and to more appropriate treatment.

THE ACTION OF ATOXYL ON THE EYE.

The discovery of the action of atoxyl and other complex organic arsenical compounds upon trypanosomes and spirochætæ has caused them to be widely studied and extensively employed in numerous diseases. Unfortunately, atoxyl, in spite of its name and of its undeniable usefulness, has not proved to be entirely harmless, and a considerable number of cases of blindness following upon its use are now on record. These recorded cases are critically studied in an interesting article published in the *Berliner klinische Wochenschrift* of October 3 by Dr. Kurt Steindorff, of Berlin. He has been able to collect records of as many as 95 cases of disturbance of vision or actual blindness following on the use of atoxyl. It would seem that the onset of the ocular symptoms is often preceded by some evidence of toxic effects—such as general languor, vertigo, headache, vomiting, colicky pains, dysuria or anuria, hypothermia, tinnitus, and deafness. The ocular symptoms comprise a more or less marked diminution of the power of sight, and the field of vision is concentrically diminished, but more on the nasal than on the temporal site.

The ophthalmoscopic examination at first gives negative results, save that the retinal arteries may be narrowed, the veins somewhat hyperemic. After a few weeks the papillæ begin to appear pale, and the condition progresses with uncomfortable rapidity to complete optic atrophy, associated with increasing dimness of vision going on to complete blindness. The prognosis of the ocular symptoms is the more grave from the facts that the immediate stopping of the drug does not, as a rule, suffice to stop the progress of the condition, and that treatment has so far proved unsuccessful. In the majority of cases the blindness must be attributed to the atoxyl and not to the diseases for which it is given, since in most of these optic atrophy is a rare occurrence.

It would appear that alcoholism predisposes to the development of atoxyl amblyopia, and that an eye already the subject of latent damage from other poisons, such as arsenic or mercury, is also more likely to be affected. Some cases published by Watermann, showing a rapid diminution of vision in tabetic atrophy, lend some support to this view. A study of the doses and of the intervals of administration of the drug in the recorded cases throws but little light upon the subject. Beck suggests, however, that the most dangerous conditions are those in which small doses are given daily for long periods without intervals, and those in which large doses are injected with very short intervals. The method of administration, whether intramuscular, subcutaneous, or subarachnoid, does not appear to exert any special influence upon the incidence of atoxyl amblyopia, nor do questions of sex, age, or severity of the disease for which the drug is given.

The pathology of the condition is obscure, but it appears to be a simple progressive atrophy. So far Dr. Steindorff can only find one case recorded—that of Nonne—which has been examined microscopically. Unfortunately, the retina was not examined, but the optic nerve showed symmetrical degeneration by Marchi's method. This extended back to the chiasma. There were no inflammatory manifestations. The question as to whether the arsenic or the anilin constituent of the atoxyl molecule is responsible has been much discussed; both substances do in rare instances lead to ocular disturbance, but this is usually of the nature of an optic neuritis rather than a primary atrophy, as is the case with atoxyl.

The general conclusions arrived at by Dr. Steindorff are that the atoxyl exerts its toxic effect directly, or that it is converted in the eye into some more poisonous reduction product. The substance arsacetin, introduced by Ehrlich, although less toxic than atoxyl, is less active therapeutically, and ocular disturbances have even been observed after its use. Dr. Steindorff, while admitting the value of atoxyl and allied substances, counsels the utmost care in their use. His interesting review of

the subject has a useful bibliography of the recorded cases attached to it, and affords a valuable study of this important subject.—*Lancet,* Oct. 15, 1910.

PERNICIOUS ANEMIA.

GRAWITZ, in the *Medical Record* of October 29, 1910, in entering into the treatment of this affection emphasizes that a rational therapy can be undertaken only when (1) most accurate and repeated clinical investigations have established the absence of an organic affection or the presence of a parasite, and when (2) by a thorough consideration of the anamnesis, and particularly of the condition of the gastrointestinal canal, it can be decided through what injury the individual case of pernicious anemia may have arisen.

In the first place we shall have to think of the effect of some known poisons, as lead, arsenic, morphine; furthermore, of the existence of hemorrhages of the above described kind. And, of course, in these cases the injurious cause will have to be removed first of all.

In the great majority of cases observed by the author he had to deal with intestinal intoxication. In the course of years he has worked out a treatment on the basis of these considerations. This therapy is in the main dietetic, and is carried out by ingesting on the one hand no animal albumin, which is to be regarded above all as a source of toxin-formation, and secondly, trying to prevent a decomposition of the foodstuffs. The first point of this treatment is accomplished by giving these patients at first exclusively carbohydrates and fats in the most digestible form,, vegetables, fruits, soups, and at the same time foodstuffs which stimulate the appetite, avoiding, however, meats and eggs entirely. If these patients are in a high degree of exhaustion we may give substances very rich in albumin, as in nutritive enemas, eliminating thereby the above-mentioned dangers. The second way of disinfecting is at the beginning the best—regular lavage of the stomach with a one- to two-per-cent sodium chloride solution, and at the same time a daily irrigation of the gut, likewise with a solution of sodium chloride, by which, as the author thinks, the mucosa is best and most safely cleansed, and at the same time stimulated. If the patients are too weak to bear the lavage of the stomach we must restrict the treatment to ingesting fresh juices of fruits, best lemon-juice in form of lemonades, thus supplying a certain substitute for the lack of hydrochloric acid in the stomach. This is the same treatment that has been applied for scurvy, which depends undoubedly also upon a putrefaction of albumin. The author does not consider the use of disinfectants, such as calomel, indicated in these patients. If the patients are very exhausted alcoholic drinks may be allowed. Special attention has to be directed to the condition of the always affected heart muscle, and therefore it is best to administer digitalis preparations from the very beginning. Of course, the patients must, at first, be confined to bed.

The usual course is that solely under this dietetic and strengthening treatment the temperature, which is always increased at the beginning, goes down, the appetite, being usually entirely absent, begins to come back, and the patients feel better. At this time the author begins the arsenic treatment, which he carries out by injecting a neutral one-per-cent solution of sodium arsenate in increasing doses from 1 milligramme to 1 centigramme daily. He asserts he is not able to state that the newer organic arsenic preparations give better results in these blood diseases, and the inorganic preparations offer the advantage that the toxic symptoms are known and can easily be recognized, while the organic preparations, especially atoxyl, as we know, in not a few cases lead to the most severe symptoms of intoxication, especially to blindness.

Iron is of no use in the treatment of these forms of anemia, if we consider that the patients must have large iron-deposits in the liver, on account of the strong hemolysis, which they can use sufficiently as a material for building up hemoglobin.

The treatment with organic preparations made of bone-marrow has, as far as the author asserts he can see, given no particular results, and he thinks it does not offer any chance if we consider the peculiar etiology of these affections.

Transfusions of human blood are, however, important. In some cases they have been done successfully in patients in whom the regeneration of the blood was extremely poor. But it has been recently shown in the author's laboratory by Werner Schultz, in extensive researches, that before carrying out any transfusion the action of the blood of the donor upon that of the recipient ought to be tested carefully with respect to the hemolyzing and agglutinating power. The author warns, therefore, against performing transfusions without these important precautions.

Finally, he wishes to emphasize that, of course, this particular treatment of the intestinal tract cannot be successful in all cases, since in the first place not all cases of anemia originate in the same way, and secondly, the capacity of regeneration of the bone-marrow is an uncertain factor, which cannot even approximately be taken into account beforehand. The prognosis is therefore to be considered doubtful in every case. If, however, a favorable result has been obtained by this treatment we have no reason to doubt that this result is a permanent one. Various authors have very correctly pointed out that relapses occur frequently in this affection. These relapses, however, can be explained in just as simple a manner as those in diabetics who have been made free from sugar by a rational diet, in whom, however, the disease appears again after a more copious ingestion of carbohydrates. In the same way the patient with an insufficient gastric secretion is again exposed to the danger of the effect of toxic products if his mode of life becomes irregular, and he eats eggs and indigestible albuminous stuffs; for a complete restoration of the gastric secretion has scarcely ever been observed even in apparently entirely cured cases. It is, therefore, by all means necessary to supply the patient, as soon as he is dismissed as cured, with strict dietetic prescriptions, and in this way we succeed in obtaining not only a transitory but a really permanent recovery.

RADIUM AND RADIOACTIVITY.

There are several ways of employing radium in therapeutics. It is in surgery that it was first turned to account. The extremely violent action of radium on the tissues renders special precautions necessary. First we must apportion the quantity of rays to be brought to bear in each case, then we must protect the healthy tissues against the unnecessary and injurious action thereof. Lastly, the method of application varies according to the individual requirements. It must be borne in mind that the rays emanating from radium are not simple; they comprise several kinds of rays which differ from each other by their mode of action and by the degree of penetration into the living tissues. This has led specialists to devise instruments and appliances as complicated as they are ingenious. Radium seems to exert a specific action on cancerous and angiomatous tumors. It has yielded remarkable results in certain forms of cancer, in keloids and vicious scars, in angiomata and pigmented nevi, in cutaneo-mucous tuberculosis, and in certain varieties of chronic, pruriginous, inflammatory dermatoses.

According to Dominici and Gy, radium gives good results in gonorrheal arthritis, obstinate neuralgia, and neuritis. As to the internal and external use of the emanation, however, we are no longer on sure scientific grounds. In passing, it may be mentioned that radium emanation is contained in a certain number of mineral waters, and this cannot surprise us because a sheet of underground water may conceivably come into contact with radiferous earths and so acquire the properties of induced radioactivity. It is, indeed, interesting to note that certain mineral waters which are recognized to be very efficacious are precisely those containing comparatively large quantities of emanation. The radioactivity of

mineral waters only exists at the source, for the water soon loses its borrowed properties. Possibly this may explain why there is such a difference between the therapeutical effects of mineral waters "consumed on the premises" and those drunk at home.

Numerous physicians began to try whether water that has been rendered artificially radioactive is capable of exerting a beneficial action in affections in which the naturally radioactive mineral waters display most efficacy, among them being Dautwitz, Lowenthal, Laqueur, Kraus, Jacobs, Bergel, and Bickel. Dr. Lowenthal remarks, and the observation is worthy of note, that waters rendered artificially radioactive provoke a reaction characterized by an increase of the pain and the reappearance of inflammatory symptoms in the originally damaged joints. This reaction corresponds exactly to a phenomenon with which we are familiar in the thermal treatment of rheumatic and gouty affections. Radium cannot very well be utilized as such for internal administration, in consequence of its intense action on living tissues, and this has led physicians to make use of the emanation in internal radium-therapy as well as for certain external applications. The problem has been solved by the construction of emanation apparatus. In these the radium is surrounded by water, to which it communicates uniform qualities of emanation. The quantity of emanation in this water can be measured in units by the electroscope. The emanation apparatus consequently produces a solution of the emanation in stated doses, and such water can be used for baths or taken internally, or it can be utilized to increase the radioactivity of a mineral water, to be employed as directed.

The external application of the emanation may take the form of baths, compresses, or mud poultices. With regard to baths, it is probable that the effects are due to inhalation of the emanation in the water vapor and not to transcutaneous absorption. The prescribed quantity of radioactive water is added to a bath at the ordinary temperature, in which the patient is left for about half an hour, stirring the water frequently. Compresses are prepared of various sizes. Before being applied they are steeped in boiling water, wrung out, and placed round the joint or over the nerve trunk, waterproof being placed outside, to be left *in situ* twelve hours. The compress can only be used once, and the process of reënforcing it takes some four days. Radioactive mud is a very convenient mode of application. It is prepared by mixing powdered pitchblende with twice its volume of hot water. This is applied direct to the part to be treated; it is easy to use and can be left on several hours under a piece of waterproof. This mud exerts a sedative effect and is believed to promote the absorption of exudations. It does not excite any irritation of the skin or give rise to inconvenient reaction; its radioactivity is permanent, but when it has been used it must be allowed to dry for a fortnight before using again.

The emanation can be given in two ways —viz., as a drink and by inhalation. The prescribed number of units is obtained by adding a suitable quantity of radiogenous water to a mineral water, which must be drunk forthwith, taking care not to shake it up too much. Patients who are taking large doses must be closely watched, and in presence of symptoms of violent reaction the treatment must be modified or suspended. For inhalations a special apparatus is employed, the radiogenous water being heated and the vapor inhaled by the patient. Each sitting lasts three or four minutes.

What, then, are the principal indications for the therapeutical application of radium? On comparing the results obtained in Germany and in France one cannot but be struck by the singular unanimity of views of the observers, all the more so seeing that this concordance is rather rare in medicine. It is to be noted that the Germans do not quote French investigators, nor the French German authorities; moreover, the researches were carried out at about the same period. The German school lay down the

following indications: (1) Muscular rheumatism, chronic and subacute articular rheumatism, and all forms of chronic arthritis; (2) gonorrheal arthritis and rheumatism; (3) neuralgia, especially sciatica, neuritis, and the lightning pains of locomotor ataxia; (4) catarrhal affections of the respiratory tract, pharynx, and larynx; and (5) affections of the frontal and maxillary sinuses. The French indications have been summed up by Dr. Claude, of the St. Louis Hospital, as follows: (1) Rheumatoid arthritis; (2) gonorrheal rheumatism; (3) various arthropathies; (4) diseases of the nervous system; and (5) certain cutaneous and gynecological affections. The only difference to be noticed between the French and German authors is in the mode of application. In France the treatment consists mainly of baths and mud poultices, whereas in Germany considerable importance is attached to the ingestion of water laden with emanation.—*Lancet,* Oct. 15, 1910.

THE PRESENT STATUS OF ANTITYPHOID INOCULATION.

GOSMAN in the *Journal of the American Medical Association* of October 1, 1910, in a paper on this subject reaches the following conclusions: Considering all the data it seems that the present status of these inoculations against typhoid fever is that they are valuable as a method of preventing the disease and are perhaps the most valuable single asset we have in combating an epidemic, and there is no doubt in the minds of most thinking and up-to-date medical men that they should be used in the following classes of persons: first, all nurses, ward attendants, hospital corps men, Red Cross assistants, physicians, and medical students; also all persons who contemplate a journey into a section where typhoid is known to exist or is suspected of existing. Also, the inoculations should be done generally in districts suffering from an epidemic, and especially in the families where a case exists, and he adds that in time of war all volunteers at camps of concentration should be inoculated as soon as possible after the camp is started.

Finally, it seems that typhoid will always be with us, but there is no necessity of its always being with us in our armies to any such appalling extent as it has in the past; therefore, the necessity for antityphoid inoculations will surely always be with us, for no matter how careful we are of our sanitation, our milk, our water, our flies, our contact infection, we will always have one or more of our much-talked-of-friends, the chronic typhoid carriers, and it is only by inoculating them and other friends and acquaintances that we can keep more or less of them free from typhoid.

The author is convinced of the harmlessness, and at the same time of the effectiveness, of this procedure, and would recommend its universal adoption, to the end that our armies in times of peace and war, and our communities at all times, may be kept as free as possible from that terrible epidemic disease, typhoid fever.

And last, but not least, the author believes he can state from a careful study and investigation of the matter that the present status of antityphoid inoculation as a means of prevention is assured, and that its future possibilities are great.

POSTOPERATIVE TREATMENT OF ABDOMINAL SECTION.

WELLS *(American Journal of Obstetrics and Diseases of Women and Children,* August, 1910) notes in his preparation for operation that the abdomen is shaved on the evening before operation and is scrubbed with gauze and tincture of green soap and warm water. The soap and water is carefully washed off and the skin dried with alcohol, painted with tincture of iodine, and covered with dry sterile gauze. When the gauze is removed before operation the skin is again painted with iodine. The gauze is not introduced into the peritoneal cavity unless it is necessary to hold back the intestines or to protect them from probable infection. Where a median incision has been used the abdominal dressings

are held in place by a many-tailed adhesive plaster snugly applied. Before the patient is taken off the table she is given a hypodermic of eserine salicylate 1/40 grain and atropine sulphate 1/120 grain. This is found to have a very positive effect in relieving postoperative pain and nausea, in promoting intestinal peristalsis, and in preventing shock. When it is used morphine is seldom needed for the control of pain. The dose of eserine is seldom repeated and should not be given more than twice at four- to six-hour intervals in doses of 1/60 grain. An overdose may paralyze the intestinal coats by overstimulation with serious harm. Moreover, when there is actual obstruction eserine is dangerous. If the patient is restless and suffers ⅛ grain of morphine is given, or if the stomach be retentive 8 grains of aspirin and 5 grains of veronal. Water is given by the mouth if there be vomiting, and a half-pint of warm water is given by rectum every four hours for six times. An ice-bag, or sand-bag weighing 6 to 8 pounds, is placed just above and over the symphysis, giving much comfort, acting as a splint and helping to keep wound surfaces closely together.

If the bowels do not move by the third day calomel and salts, or preferably castor oil, are given. As a rule no other means of medication is employed. Early feeding is regarded as important, and should be done the morning after operation: cereals, scraped meat, very soft-boiled eggs, or crusts of stale bread. With a clean tongue the patient is rapidly worked along to a fairly full diet. Should the urine contain much indican the lactic acid bacillus is given with food both before and after operation. Sometimes on the first, usually on the second or third, day after operation the patient is lifted out of bed into a chair for a half-hour in the morning and afternoon, and after simple or clean operations is lifted out of bed from the first onto a commode to pass urine. The time out of bed is gradually increased according to strength. At the end of the week she is usually able to walk about.

THE TREATMENT OF ECLAMPSIA BY DILATATION OR INCISION OF THE CERVIX.

PETERSON *(Surgery, Gynecology and Obstetrics,* August, 1910) thus summarizes an article on this subject:

While the cause of eclampsia is yet unknown, the intoxication evidently is intimately associated with a disturbance of protein metabolism.

Since the autointoxication is caused by the pregnant state, it follows that the desideratum for the eclamptic is the cessation of pregnancy.

In a large proportion of cases the eclamptic seizures cease after the uterus has been emptied.

Postpartum eclampsia occurs because of the severity of the intoxication prior to the evacuation of the uterus. In other words, the intoxication was so profound that its results could not be completely averted by the emptying of the uterus.

The mortality of eclampsia is much less under the plan of immediate delivery than under expectant treatment.

No time should be wasted in medicinal treatment after the first eclamptic seizure, but the uterus should be emptied at once.

Such treatment not only will be best for the mother, but it will give the child the best chance for life.

The slow methods of emptying the uterus through the use of the bougie, the cervical pack, or the bag are not applicable to eclampsia.

That method should be chosen which will empty the uterus quickly with a minimum amount of injury and shock to the patient.

Where the cervix is soft and easily dilatable this can be best accomplished by manual dilatation.

Instrumental dilatation is too apt to result in severe cervical lacerations even in skilled hands, to make it a desirable method for the practitioner.

Vaginal Cæsarian section is the ideal operation for rapid evacuation of the uterus in eclampsia.

Abdominal Cæsarian section for this condition, while giving good results so far as

the child is concerned, has such a high maternal mortality that the operation is contraindicated except in eclampsia with contracted pelvis or when delivery through the natural passages for other reasons is impossible.

LATE RESULTS OF TRANSPLANTATION OF VEINS INTO ARTERIES.

CARREL (*Glasgow Medical Journal,* August, 1910; quoted from *Revue de Chirurgie,* June, 1910) records that in his experimental work in the substitution of a segment of a vein for a portion of an artery excised, it has been shown that the vein reacts to its new conditions by undergoing a process of thickening proportionate to the increased intravascular pressure. Five to eight months after the anastomosis there was neither shinkage nor dilatation of the implanted segment of vein, which, becoming white in color as contrasted with its original bluish tinge, has now acquired walls of a thickness equal to that of the arterial walls. These results have been confirmed by many other workers. The operation has been carried out twice in men, once successfully.

It is clearly an advantage to use the patient's own tissue in preference to "grafts" which have been preserved in cold storage. Great stress is laid on aseptic technique, as the slightest trace of infection will spoil the operation. There should be no visible reaction in the adjoining tissue, and no leucocyte infiltration round the silk threads. Carrel differentiated degrees of non-suppurative infection to an extent not generally recognized, since they may be present when a wound is healing quite satisfactorily.

Perfect hemostasis both in the case of the artery and in the surrounding field must be effected, since coagulating blood liberates substances which tend to produce coagulation.

End-to-end anastomosis is preferred, and when the technique detailed is closely followed one obtains a cicatrix almost invisible, showing very little thickening and without any danger of the formation of a parietal thrombus.

There is no late yielding of the scar, and so one is enabled to study it after the lapse of a long time. Sections show thickening of the media of the vein and union to that of the artery without the interposition of cicatricial tissue. Carrel has many such sections obtained up till sixteen and twenty months after the performance of the anastomosis.

Stich considers that there is an increase of the muscle cells. This increase or hypertrophy is followed by a sclerosis and a disappearance of the fibers—an experimental demonstration of the ideas long held by Adami on the subject of arteriosclerosis.

It remains to be seen whether after three or four years the transplanted vein will not actually become degenerated, atheromatous.

The increase in the blood tension apart from any intoxication may well produce a true atheroma. Carrel thus produced an experimental atheroma, only the portions of artery used had been previously weakened by cold storage.

Up till twenty months, then, it is proved that there is excellent adaptation to its new functions by the implanted vein, and only time can show whether it is preferable to transplant arteries which have been artificially preserved.

SPINAL ANALGESIA—CLINICAL EXPERIENCE.

ARLT (*Münchener medicinische Wochenschrift,* July 12, 1910) records over 2500 cases. For all operations below the navel he prefers this form of anesthesia to general narcosis. Under no circumstances is the needle introduced into the dorsal region, nor after the injection is the pelvis elevated to allow the fluid injected to affect the higher portion of the cord. When the heart, lungs, or kidneys are especially vulnerable there can be no question as to the superiority of lumbar anesthesia. As a rule the method is not used under the age of sixteen. Old age is never a contraindication. In bloodless patients the injection is made slowly and in small quantity. Nervous patients at times prefer general anes-

thesia. It is usually considered inadvisable to employ this method of anesthesia in septic and tuberculous patients. Arlt is not in accordance with this view. The effect of the anesthesia is absolutely satisfactory in all operations involving the lower extremities, the pelvis, and the pelvic organs. Frequently the anesthesia extends as high as the lower border of the ribs, so that occasionally it is possible to do stomach operations under lumbar anesthesia. The analgesia lasts between thirty and forty-five minutes, rarely sixty minutes. If the operative procedure requires a longer time than this it should be combined with local infiltration, or exceptionally with the administration of ether or scopolamine and morphine.

As to the method of injection, the patient is put in a sitting position leaning forward. The skin overlying the interspinous spaces from the second to the fourth is narcotized. This local anesthesia is carried to deeper parts. A stab wound is made through the skin 0.5 centimeter in length. The needle armed with a mandarin is then driven in until it can be felt passing through the dura. The mandarin is withdrawn and the cerebrospinal fluid flows. The needle is attached to a glass chamber containing the dose of tropacocaine in powdered form (0.07). This drug is thus dissolved in the cerebrospinal fluid. By means of a rubber bulb the fluid is then injected, a stopcock being provided which can be turned off before air is allowed to enter. This method has been used in hernia operations, appendectomies, rectal operations, for the conducting of various procedures upon the lower extremities, testicles, the bladder, urethra, and penis, and in 96 cases for the performance of laparotomy.

In two per cent of cases either there was no analgesia or it was feeble and unsatisfactory, or the satisfactory effect was not sufficiently lasting to allow of a complete operation.

In following the technique as thus described Arlt states that he has seen no instance of paresis, persistent headache, nor fever, from which he concludes that when these accidents happen they are always indices of slight infection.

In children and very weak patients, for the purpose of avoiding toxic symptoms Arlt has lately been proceeding as follows: After the injection of tropacocaine has been made the needle is allowed to lie in place until analgesia has developed. As soon as this has reached the degree desired as much cerebrospinal fluid is withdrawn as is equivalent to the amount of solution of tropacocaine previously injected. An analysis of the fluid thus withdrawn in four cases showed that it contained 25 per cent of the drug previously injected. Neither the intensity nor the duration of the analgesia seems to have been affected by the withdrawal of the fluid, nor have there been any traces of intoxication in children from seven to ten years of age injected with the full dose.

GASTROENTEROSTOMY.

BLAD (*Archiv für klinische Chirurgie,* Bd. 92, Heft 3) reports from Rovsing's clinic 20 cases of gastroenterostomy and states that clinical observation shows that a patient gets great relief from this procedure even when the power of the stomach to empty itself has not been improved thereby. In explanation of such cases the author sets forth that as a rule after gastroenterostomy alkaline bile and pancreatic fluid are poured into the stomach in large quantities through the opening made at operation; by this means the large quantity of very acid gastric secretion is neutralized, and thus a part of the symptoms of ulcer are overcome. At the same time it can be demonstrated that after gastroenterostomy there is a reflex diminution in the amount of gastric juice secreted. A study of the author's cases shows that in pyloric stenosis certain relief comes from gastroenterostomy through this change in the character of the secretions as well as through the mechanical relief of obstruction. In a general way the hypersecretion of a very sour gastric juice in ulcer is an indication for gastroenterostomy. On the other hand,

gastroenterostomy is contraindicated in cases in which no marked changes have taken place in the pylorus and ulcer is complicated by gastritis and achylia. Since no improvement in the emptying of the stomach can be expected in such cases, and since there is no excessive acidity, gastroenterostomy would serve no purpose.

THE USE OF THE MURPHY BUTTON IN THE LARGE INTESTINE.

MÜHSAM (*Deutsche Zeitschrift für Chirurgie,* Bd. 105, Heften 3-4) says that the Murphy button is a suitable and proper instrument for the establishment of an anastomosis in the large intestine. The danger that the anastomosis with the button will not be efficient when proper technique is used in connection with a good button is no greater than when anastomosis is made by means of sutures. The chief danger from the button lies in the arrest of the button by means of dried fecal matter or a foreign body, as a cherry or plum stone. In the after-treatment it should be seen that the bowels are emptied at proper intervals. At the first indication of obstruction of the bowels the anastomosis should be examined. The recommendation of the use of the Murphy button in the large intestine has the same basis as in other parts of the intestine—that is, the easy technique and the brevity of the operation.

OBSTRUCTION AND PARALYSIS OF THE BOWELS; PERITONITIS.

THIEMANN (*Archiv für klinische Chirurgie,* Bd. 92, Heft 3) has made an exhaustive study of obstruction and paralysis of the intestines, including peritonitis, in Riedel's clinic in Jena, and concludes as follows:

Obstruction due to hardened fecal masses is observed in chronic obstipation with atrophy and weakness of the musculature, as, for example, in spinal paralysis, and in anomalies in the length and width of certain loops of intestine. Rarely multiple fecal calculi form producing diverticula and perforation. As regards ileus due to gall-stones, one case was observed in which there occurred circumscribed ulceration and peritonitis at two different places as a result of gall-stones. Foreign bodies which have been swallowed very seldom cause complete obstruction, because those which pass down through the esophagus are, as a rule, not arrested in the intestinal tract. The chief danger from foreign bodies is perforation, which occurs most frequently in the ascending part of the duodenum. On account of the inflammatory infiltration which results from perforation secondary obstruction may occur.

Benign tumors very seldom cause obstruction as such, but more frequently they lead to obstruction by producing intussusception. In carcinoma of the small intestine the general cachexia overshadows the local manifestations. The mortality after operation for obstructing tumors of the large intestine is very high, especially in cases of acute origin. Carcinoma of the ampulla of the rectum seldom produces complete stenosis. Inflammatory processes may give rise to obstruction through the formation of adhesions and bands of connective tissue, the obstruction coming on long after the original inflammation has subsided. Circumscribed, suppurative tuberculosis very seldom in itself results in obstruction, but more frequently obstruction is brought about by adhesions and bands which are formed through the agency of the tubercular process.

Out of 321 cases of strangulated hernia, in 36 there was rupture of the intestinal wall. This accident occurred very infrequently in inguinal hernia, but almost exclusively in femoral hernia; in four cases of obturator hernia rupture took place three times.

Postoperative ileus after reposition of incarcerated intestine may be produced by agglutination of folds of the gut or by stenosis. This can be prevented by making a primary anastomosis in doubtful cases. Volvulus is most frequent in the region of the large intestine, especially in the sigmoid flexure. The causes are abnormal length

of the flexure and chronic inflammation in the mesentery, resulting in the production of V- or U-formed loops. To avoid a recurrence anastomosis should be made at the base of the loop.

In diffuse peritonitis it is important to differentiate between perforative cases and those characterized by general suppurative effusion from an abscess, as an appendiceal abscess. The prognosis in the second variety is favorable. The mortality increases rapidly with the progress of the disease. The death-rate can be kept down only by early operation. In Riedel's clinic the mortality in all cases of peritonitis was only 3.3 per cent. The best way to excite peristalsis and keep up the strength of the heart after operation is by means of irrigation of the rectum and washing out the stomach with saline solution. The author has not had success with physostigmine or intravenous saline infusion.

In perforated gastric ulcer it usually suffices to suture the ulcer and cover its site with omentum. It is well to avoid excision of an ulcer of the small curvature because it leads to great loss of tissue and makes necessary a transverse resection. When the ulcer is at the pylorus it is often impossible to avoid gastroenterostomy. In severe acute cholecystitis early operation should be done because the prognosis of perforation of a gangrenous gall-bladder is very grave.

In perforating wounds of the abdomen the rule should be to operate at the earliest possible moment if external conditions are favorable. In subcutaneous abdominal wounds operation is justified upon slight symptoms because often the wound, hemorrhage, etc., are more severe than at first appears.

In acute dilatation of the stomach when the usual therapeutic measures fail gastroenterostomy should be done. Paralysis and dilatation of the stomach after operation can be best prevented by early and systematic siphonage of that organ.

Ileus not rarely follows appendicitis in which no operation has been done. Postoperative ileus following appendicitis is almost always found in the perforative cases. Of all means for prevention of postoperative adhesions the early stimulation of peristalsis by means of saline enemata appears to be the best. Postoperative ileus cannot always be avoided, because no precautions can prevent adhesions and new tissue formation from occurring as a result of suppurative processes. In all cases of ileus the earlier the operation the better the prognosis.

MOMBURG'S ARTIFICIAL ANEMIA.

BURK (*Beiträge zur klinischen Chirurgie*, Bd. 68, Heft 2) after experience with three cases in Hofmeister's clinic states in reference to Momburg's artificial anemia that it is practicable only in those who have a healthy heart and whose strength has not been too much reduced, because this procedure, partly in applying the constriction and partly in removing it, may produce dangerous reduction of blood-pressure. This method is to be avoided in old people and those having arteriosclerosis. In very fat individuals in whom in spite of strong pressure the femoral pulse cannot be made to disappear, the method is not applicable because it will not control bleeding. In very much emaciated persons, or in such as have ulcerative or chronic inflammatory disease of the intestines, the method is not practicable since there is danger of severe injury to the intestine from the pressure of the rubber tube.

Whether and in what cases the danger of ischemic paralysis of the conus terminalis, as observed in one case by Pagenstecher, constitutes a contraindication must be determined by future investigation.

WASSERMANN SERUM REACTION IN GENERAL MEDICINE.

MATSON (*American Journal of Dermatology*, August, 1910) notes that the spironema has been transplanted from generation to generation on rabbits' corneas and has at last been cultivated artificially. Gummata contain the spironema; the disease is transmissible in all stages, and the virus can be destroyed and the disease prevented by the

application of a 33-per-cent calomel ointment massaged in at the site of inoculation. He observes that the most important advance has been made in the serology of the disease. The scientific foundation originally claimed by Wassermann has been lost since it is known that the reaction can be obtained by using normal liver instead of syphilitic as an antigen, and since it has been shown that the antigen is not the spironema or its products as it may be obtained in alcoholic solutions. The reaction rather depends upon lipoids which are normally present and increase in the presence of the disease. This has made it possible to use substances as antigens which behave quite as well as the syphilitic liver extract and can be easily obtained. The Noguchi test, it is claimed, can be used by any physician after securing the reagents. It is open to the objection that it is difficult to obtain corpuscles for immunizing purposes, and that not only hemolysins but hemoagglutins are developed by the immunization of animals with human corpuscles. The hemoagglutins cause a clumping of the corpuscles, and the action of the hemolysins is inhibited, thus leading to error, inasmuch as many sera negative to the Wassermann give positive reaction to the Noguchi method.

It is held that in spite of attempts to simplify the original Wassermann technique, the mass of evidence points that his method, slightly modified, is the most reliable.

As to antigen Matson has found the alcoholic extract of ox heart entirely satisfactory. The reaction in competent and conscientious hands has been found uniformly negative in an enormous number of presumably non-syphilitics suffering from other diseases, and there has been no well-authenticated positive reaction obtained in a healthy man. Positive reaction is claimed to have been found in trypanosomiasis, frambesia, scarlet fever, leprosy, myxedema, and cancer. The findings in the two former may be explained by their etiological resemblance to syphilis, being probably protozoan in origin, and the reaction found in the spinal fluid in scarlet fever is claimed to be due to increased albuminoid substances which cause a mechanical fixation of complement. The few positive reactions found in cancer have been in far advanced cases offering no difficulty in diagnosis, and here the possibility of syphilis cannot be eliminated. In 316 cases of tuberculosis a positive reaction was obtained in only two, both syphilitic. For practical purposes the Wassermann reaction is sufficiently diagnostic, as positive reactions are found only with the serum of syphilitic persons. The reverse, however, is not true. Neisser holds to the principle that every patient giving a positive reaction harbors spironemas and requires treatment. Positive diagnosis should be made only when the reaction is strong. If partial and no history is obtained and mercury not administered, it should be regarded as negative. As to the time the reaction appears little dependence can be placed upon many published statistics. The blood of the individual taking mercury gives unreliable evidence for diagnostic purposes if negative. In most of the untreated cases examined by Matson the reaction was positive for chancre which had existed for seven days, whereas in cases under treatment the reaction was delayed twenty-eight days.

Blumenthal and Rascher always found the reaction negative until the sixth or eighth week. It is probable that treatment influenced these results. If it be true that this positive reaction develops so early it is evidently useful in making a distinction between chancre and chancroid. Matson states that the reaction is unusual before the second week of the primary sore and increases in frequency up to the period of eruption. There may be 100 per cent of positive in untreated or unsuccessfully treated cases. In secondary syphilis with manifestations, from 95 to 100 per cent are positive in untreated or poorly treated cases. The more definite the symptoms, the more intense the reaction. In tertiary syphilis the reaction is present in from 70 to 80 per cent of all cases. In latent syphilis from 50 to 70 per cent give positive reactions, depending upon whether early or late and how well treated.

Leser has shown that 33 per cent of syphilitics ultimately die of tuberculosis, paralysis, or aortic aneurism. Undoubtedly this percentage could be reduced by recognition and appropriate treatment. The test clearly shows that the virus may remain active for years after the infection, even though there be no manifestations.

As the result of Wassermann's test it is evident that syphilis is much more common than it is generally supposed to be. Gummata of the internal organs often give no symptoms and interfere but little with function. Syphilis should always be considered in liver disease whether there be a history or not, and the topical diagnostic method of applying the reaction should be resorted to.

Aneurism has always given a high percentage of positive reactions. It is well to suspect syphilis in all cases of aneurism or aortic disease, especially aortic insufficiency, of which 80 per cent are Wassermann positive. The Wassermann reaction is the only means at hand for separating the cardiovascular lesions of syphilitic origin from others.

In the so-called parasyphilitic diseases and in the diagnosis of metasyphilitic and other nervous disorders the Wassermann reaction is extremely valuable. The examination of 591 inmates of the Oregon State Insane Asylum in nearly 20 per cent gave positive reactions, while only five per cent gave specific histories, and none presented visible or clinical manifestations. The coexistence of positive reactions in metasyphilitic disease is striking. The reaction was positive in nine cases of general paralysis and negative in four. Of the nine positive cases, six gave luetic histories and in three it was unknown, whereas no history of syphilis was obtained in the negative cases.

Nearly 10 per cent of cases of dementia precox were positive, while none gave a syphilitic history. Fourteen per cent of 174 cases of paranoia, 19 per cent of 57 cases of chronic mania, and 16 per cent of 30 cases of chronic melancholia were positive.

That a general paralysis is the result of syphilis, in almost every case, there can be no longer any doubt, for it has practically always given a positive reaction. Indeed, Wassermann states that general paresis never occurs without syphilis. Paretics are infective, and if we examine the serum of the wife and children, a positive reaction will be obtained.

The specific origin of tabes is also supported by the Wassermann reaction. It probably gives a lower percentage of positives because it is a consequence of an earlier poorly treated specific infection. Leser gives 50 per cent positive in tabes; Wassermann and Plaut got a positive reaction in 70 per cent and Nome in 90 per cent; Sachs and Castelli 64.3 positive in tabes and 67.7 positive in general paralysis.

This reaction has shown the necessity of more energetic and individual treatment. This is demonstrated by the fact that many soldiers examined reacted positively, though they had taken the usual two years' course of mercury by mouth after the disappearance of all manifestations; these cases were converted into a negative in three months by hypodermic injections of mercury.

Early administration of mercury may cause the disappearance of manifestations with little influence on the spironemas, the organisms remaining latent for years, and upon favorable conditions renewing their activity with reappearance of manifestations. It would not seem advisable to leave off treatment on one negative reaction. The positive reaction may be made to disappear in the first few years of energetic treatment, and this sustains the conclusion that a positive reaction means active syphilis, even though there be no evidence, and speaks for renewal of treatment. Patients who have been well treated give negative reactions, whereas those poorly treated give positive reactions years later, and these may be considered candidates for tabes and paresis. The number of inunctions necessary to convert a positive reaction into a negative varies with each patient and should be controlled by the blood examination. One should attempt to treat so that the reaction remains continually absent. The persistence of a positive reaction in tabes remains little affected by treatment. Matson has never seen a positive reaction converted

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into a negative by treatment when occurring in a case in which the infection was ten years prior. A persistence of the positive reaction during the first year has little effect upon the prognosis.

Purckhaur found in latent cases the reaction positive in 50 per cent after one course of mercury, but after eight or more courses 90 per cent were negative. The more energetic the treatment the fewer the positive reactions. Boas states a positive reaction after systematic treatment is a precursor of a recurrence and a signal to resume treatment.

Leser points out the necessity of more active treatment than has been customary. In only 35 per cent of his cases was a positive reaction transferred to a negative under ordinary dosage. He urges an increase in the quantity of mercury given. In the determination of a cure, one month at least should elapse after the administration of mercury before doing a Wassermann reaction, for after effectual treatment the Wassermann reaction may be negative. Potassium iodide has little effect upon it.

In regard to prognosis there is no reason to suppose that either the disappearance of the reaction or its persistence during the first three years is of prognostic import. Whether or not the disease is transmissible during the period of negative reaction cannot be stated at present, except in the first two or three weeks after the primary lesions appear, when the disease is transmissible and reaction frequently negative. As for the immunity conveyed by one attack, Neisser has found that all animals which have resisted one attack are still diseased and that when killed their organs are still infected, and that all cured animals are immediately susceptible. The Wassermann reaction has proved the same thing to be true in man.

Krafft-Ebing failed to produce syphilis in nine general paretics, giving no syphilitic history; they were inoculated from a typical hard chancre. It has been shown that the apparent immunity has been due to a latent syphilis, and strictly speaking there is no immunity.

Colles's law, which held that a mother might give birth to a syphilitic child without herself becoming infected, does not hold good, for the test proves she is already diseased and is a latent syphilitic.

It is further shown that the apparently healthy children of syphilitic mothers thought to be immune, as claimed by Profeta's law, are also latent syphilitics.

Baisch holds that immune substances do not pass through the placenta from mother to child, or *vice versa*, and concludes that the presence of a hemolysis-hindering substance is dependent upon the presence of spironemas in the organism. He found 80 per cent of the cases of premature death and maceration of the child were due to syphilis, and that the mothers, even though they were clinically healthy, were truly syphilitic and required antisyphilitic treatment.

APPENDICOSTOMY AND CECOSTOMY.

CLOPTON (*Interstate Medical Journal*, August, 1910) in a review of recent literature on this subject notes that in the Rangoon Hospital for the treatment of chronic ulcerative processes of the large bowel, where internal medication has proved impracticable, appendicostomy has been employed for several years. It is noted that a small wound is made under anesthesia, but if the appendix is difficult to find salt solution is poured into the abdomen, which makes the appendix float up into the wound. Of 14 cases all were benefited and six cured.

Bates records twelve patients treated for amebic dysentery by appendicostomy, of which six died, three were lost sight of, and three returned to the hospital with recurrent dysentery.

Reed prefers cecostomy to appendicostomy, and observes that a majority of appendices perish within a few days after operation, leaving the remaining condition one of cecostomy with an opening at an undesirable point. Reed believes that mucous catarrh and colitis which have defied treatment uniformly yield to colonic lavage when kept up through the cecum for periods vary-

ing from several weeks to several months. He has operated on four cases which were in the habit of shedding large mucous casts, with three cures.

Constipation, especially of the chronic type and not complicated with enteroptosis, has yielded excellent results to colonic lavage through cecal irrigation. Reed advocates cecostomy as a means of introducing hot salt solution into the bowel after operation on ruptured pus tube with peritonitis, as it promptly produced a reaction and the colon was thoroughly washed out.

Keetley, basing his opinion on an experience of 34 cases of appendicostomy, believes it is a method of great value in chronic constipation not yielding to ordinary procedures. The colon is flushed daily with a weak solution of Glauber's salt or cascara.

Billington believes that by means of appendicostomy one is better able to carry out Murphy's suggestion of flooding the circulation with fluid with absorption through the lower bowel.

Groves finds appendicostomy exceedingly useful in conditions of acute peritonitis, especially when this has been caused by appendicitis, and in children, because they do not always tolerate the tube in the rectum. He believes the main value of appendicostomy in acute peritonitis is rather as a means of combating shock and toxemia than for nutritional purposes. He makes the suggestion that in cases of appendicitis with septic peritonitis, it is best first to open on the left side, and if no pus is found this wound can be closed and the regulation opening made on the right side. If the appendix is sloughed, as it was in his two cases, a tube can be tied into the cecum through the base of the appendix.

Herter suggests that the practice of rectal and colonic lavage has come to play a very important part in the treatment of pernicious anemia as an adjunct to arsenic and other medication. Burch has in one instance used appendicostomy to treat a case of pernicious anemia, flushing the colon twice daily with a quart of salt solution. There was rapid and pronounced improvement. He recommends that in all cases of pernicious anemia the stool should be examined in order to determine the presence of the bacillus capsulatus aerogenes. If these bacteria are present in great quantities, high irrigation, combined with arsenic internally, should be used, and if the patient fails to improve then the appendix offers the best route for thorough irrigation.

RESECTION OF THE RECTUM BY THE ABDOMINO-ANAL ROUTE.

Abel Desjardins (*La Presse Médicale*, No. 55, 1910) thus describes the technique of the operation:

The patient is prepared by purging him four days before the operation. The next day the bowel is washed out. The next day he is purged again. The next day the bowel is again washed out, and this procedure is repeated the morning of the operation. From the moment of his first purging he is put on a strict milk diet. From the evening of the second purge he is given constipating medicine, preferably an opium preparation. The bowel washings, which are simply for local cleanliness, are done with a solution containing either peroxide of hydrogen or, better, chloral hydrate 10 grammes to the liter of water.

The anesthetic having been given the anus is dilated as widely as possible. A mandarin is introduced, meaning by this term a cylinder about 20 centimeters long and 4 centimeters in diameter and having an anteroposterior curve corresponding with that of the sacrum. This mandarin is furnished with a handle for its proper management after its introduction, with a sort of a groove at its end. It looks not unlike a long, somewhat slender erect penis with a backward curvature, and with the coronary sulcus passing circularly rather than obliquely from above downward. The mandarin having been introduced the surgeon changes his gloves. The patient is put on his back, and a laparotomy is performed with an incision as low as possible. The pelvis is elevated and cleared of the small intestines, which are packed off. The rectum is denuded and isolated after incising

the peritoneum laterally and in Douglas's cul-de-sac. The superior and middle hemorrhoidal arteries are resected and ligated, a circular ligature is tied about the gut, securing it into the groove just below the head of the mandarin. The gut is then sectioned at least 2 centimeters below the lesion, preferably with the galvanocautery. A second section is made above the lesion and immediately below the ligature tied about the mandarin. There is thus isolated a rectal cylinder containing the lesion. The cylinder is split on one side and removed. By traction on the mandarin the upper segment of the gut is brought down and is invaginated into the lower segment without unduly stretching the mesocolon, which is loosened or sectioned in case undue tension is exerted upon it. When the upper section is invaginated into the lower section, the abdominal portion of the operation is completed. The peritoneum is sewed and the abdominal wound closed. The patient is then again placed in a gynecological position and the mandarin liberated by cutting the circular thread tied into its neck. The segment of bowel which it carries is fixed into the anus. When the bowel thus brought down sloughs the results are said to be good. The particular point in this operation is the use of the mandarin.

THE OPERATIVE MOBILIZATION OF ANKYLOSED JOINTS.

PAYR (*Münchener medicinische Wochenschrift*, Jahrgang 57, No. 37) says that one of the most difficult tasks of surgeons is to render movable again a stiff joint. In spite of the high development of technical skill in surgery this problem is sometimes impossible of solution. Our knowledge of this subject can be increased only through the reports of experiments made in immobilization of these joints. Bad results must be reported with the greatest frankness as well as those which result satisfactorily. Above all there must be great precision in reference to the indications and contraindications for operation. Through refinements in diagnosis we will perhaps be able to cure many apparently hopeless cases and at the same time avoid operation in cases which are unsuited to this method of treatment. The methods of treating stiff joints are principally the simple separation of the adherent joint ends through arthrolysis or osteoarthrotomy; resection; the method of Kocher, which consists in the arthrolysis or resection of the joint ends, placing them in a position of luxation and replacing them fourteen days later in order to prevent reunion; the interposition after arthrolysis or resection of dead inorganic or organic material; transplanted living tissue or a pedicle flap from the neighboring soft part; the creation of a pseudoarthrosis in the neighborhood of the ankylosis; or the transplantation of not only parts of the joint but of the entire joint. A glance at these manifold methods of treatment indicates the difficulties which are to be overcome.

The points in diagnosis to consider in view of operation are the anatomical form of the ankylosis and its etiology, the condition of the periarticular soft parts, the condition of the apparatus concerned in active movement, the possibility of eliminating disease processes which produce the stiffening, and the general condition of the individual. It is thus seen that the indications for operation and the diagnosis are very closely interdependent. In multiple ankyloses operative treatment is not favorable. When two or three joints are affected it is best to operate upon the different joints at intervals. In the primary chronic progressive processes, such as polyarticular arthropathies, operation is clearly contraindicated. It is especially important in traumatic cases not to delay operation too long on account of the muscular atrophy which supervenes. The prognosis of operation is difficult to state in the present condition of this form of joint surgery. The more experience one has had the better he will be able to state the probabilities. The best that can be done is to say to the patient that an attempt will be made to give him a movable joint, and that whether it will succeed or not remains to be determined. Each joint has a special prog-

nosis. By far the most favorable is the elbow, and the most unfavorable is the knee.

The operative treatment divides itself into three phases: the laying free of the stiff joint; the opening and the separation of the ankylosed part; and measures for providing against reunion of the parts. The author believes that the interposition of living tissues best serves the purpose. For simple defects in the cartilage simple transplantation of the periosteum and perichondrium serves the purpose, but in all other cases it is best to interpose a pedicle flap of muscle, fat, fascia, tendon sheath, or synovial membrane. The place from which the tissue is taken, its size, and the character of the tissue vary from case to case. It is important to securely fasten the flap of tissue over the bone ends so that it may retain its position when subjected to pressure or when the parts are moved. The dressing which is put on after operation should make firm compression so as to prevent a collection of blood in the joint, which would separate the joint ends which have been adapted to each other. The author almost always uses extension for several days, when necessary with the assistance of a Steinmann's nail. Only exceptionally is a plaster bandage used, and this only when there is danger of dislocation of the joint, as in case of the hip-joint. When necessary any blood or wound serum is aspirated from the joint after two or three days by means of a needle and syringe.

It is of the greatest importance to carry out the after-treatment with care and judgment. The skin should be kept movable over the underlying bone so as to prevent adhesion of the scar. Light passive movement should be carried out daily. Of much more importance is active movement carried out by the patient under instructions. After healing of the skin wound the position of the joint should be frequently changed by moving it in different directions. Massage, vibration, and electricity are of assistance, as are also hot-air baths, daily baths, mud baths, and the like. Fibrolysin injections repeated every other day have been of assistance in the author's cases. Brusk, passive movements, especially under ether, are harmful because the unavoidable hemorrhage and the injury to tissues which such movements produce defeat our object. The condition of the joint is observed at intervals by means of the *x*-rays. In this way the development of osteophytes or other interferences with joint motion can be detected early. If the apparatus for active movement is found to be too weak, it can in some cases be strengthened by tendon transplantation.

Unfavorable complications of operation upon joints are wound infection, tearing away of the cartilages and ligaments during the opening or the passive movement of the joint, fractures and wounding of the periarticular soft parts such as vessels and nerves.

Of 30 operative cases upon all sorts of joints the author has had nine satisfactory and enduring results.

THE TREATMENT OF ROUND ULCER OF THE STOMACH.

PAYR (*Archiv für klinische Chirurgie*, Bd. 23, H. 2) after a detailed study of the pathogenesis, pathological anatomy, and radical operative treatment of round ulcer of the stomach concludes as follows:

By injection of dilute formalin, alcohol, or concentrated or hot physiological saline solution into the vessels of the stomach there are produced ulcers of the stomach which in their progress, duration, adhesions with neighboring organs, properties of becoming callous or forming tumors, as well as in their clinical manifestations, closely resemble the round ulcers seen in human beings. The histological study of stomach ulcers which have been excised or resected by the author showed in 26 per cent of the cases carcinomatous change. The callous ulcer seemed especially disposed to undergo this change; microscopically in the majority of these cases a differentiation could not be made between callous ulcer and carcinoma. In cases of callous ulcers there were almost without exception in the immediate as well as the remote region of the ulcer marked

vascular changes in both the arteries and the veins, chiefly in the form of thickening of the wall, with narrowing of the lumen and not seldom thrombosis with consequent complete obliteration of the vessels. On this account the nourishment of the stomach wall in the region of the ulcer as well as that of the scar which follows its healing was greatly interfered with. This explains the slight tendency to heal and great tendency to recurrence in this form of ulcer and justifies its radical removal.

The choice of operation depends upon the conditions in each individual case. For simple ulcers or those which produce stenosis of the pylorus in the course of healing, gastroenterostomy is to be recommended. In torpid, callous ulcers, even in the region of the pylorus, resection is advised; particularly is resection to be recommended in ulcers which have a seat completely outside of the pylorus, especially in the lesser curvature and posterior wall. The choice of operation must depend upon the anatomical peculiarities, the position of the ulcer, the stage of its progress, and the general condition of the patient. The immediate danger of resection for ulcer is notably less than formerly considered. Out of 500 excisions and resections only 10 per cent resulted in any immediate danger to the patient. The danger of resection is naturally always greater than that of gastroenterostomy, the latter showing only 3 to 5 per cent of unfavorable results.

It is not uninteresting to note that the relative mortality between resection and gastroenterostomy is about the same in cancer as in ulcer. Modern physiology of the stomach teaches that the transverse resection of the stomach with cutting off of the end branches of the vagus nerve as they course through the stomach wall so lowers the muscle tonus in the antrum and pylorus that pylorospasm is prevented for a longer time than is the case after gastroenterostomy. The same end is accomplished by resection of the pylorus. In view of the previously much underestimated danger of carcinomatous change, especially in callous ulcer, resection is now considered much oftener than formerly to serve a good purpose. The author's experience with the secondary development of carcinoma at the site of an ulcer after gastroenterostomy leads him to believe that in a certain number of cases resection of a callous ulcer may be looked upon as an early operation for cancer.

CHRONIC RETENTION OF URINE WITHOUT MECHANICAL OBSTRUCTION.

ROCHET and MÜLLER (*Lyon Médical*, No. 30, 1910) describe a class of cases, usually men in the forties, who empty the bladder with difficulty and pass a catheter to secure complete evacuation of the urine, who present all the symptoms of a prostatism, and in whom the most careful examination fails to show any lesion which can explain the functional trouble. Treatment as a rule is quite inefficacious and even prostatectomy fails to relieve. In two such cases the authors made a small perineal section opening the membranous urethra. Through this opening the prostatic urethra and internal vesical sphincter were dilated until the finger could be introduced. This examination exhibited an indurated ring about the internal vesical sphincter. They attribute the retention to a precocious sclerosis affecting the vesical sphincter, which sclerosis is in turn due probably to a reflex from the focus of irritation in the prostatic urethra.

THE TREATMENT OF CALLOUS ULCER OF THE STOMACH.

KÜTTNER (*Archiv für klinische Chirurgie*, Bd. 93, H. 2) states that, although he formerly was of the opinion that callous ulcer of the stomach was best treated by gastroenterostomy, he now believes, basing his opinion upon his own observation, that the operation of choice is resection, upon the ground that it is impossible macroscopically either clinically or after the abdomen has been opened to differentiate between a callous ulcer and a carcinoma; it is only by

microscopical examination that a differential diagnosis can be arrived at. The mortality of resection is not appreciably higher than that of gastroenterostomy, and the end results of resection are far better. In the author's experience 30 cases of resection which appeared clinically to be callous ulcer turned out on further examination to be carcinoma. In eight cases there was a typical history of ulcer extending over a period of fifteen to twenty years, but the microscopic examination revealed carcinoma. On the other hand, in six cases without any previous symptoms of ulcer the patients suddenly became ill with marked gastric phenomena, yet at operation only ulcer was found, although four of the cases were of the carcinoma age.

As to the duration of the results, as concerns resection and gastroenterostomy, the author has reports of nineteen resections and twelve gastroenterostomies. Of the 19 resections there are seven in whom later histologic examination showed carcinoma. Of these, two died of recurrence, one is suffering from recurrence, four are living and have gained 32 to 45 pounds and are healthy. These cures are to be attributed entirely to the resections because, if gastroenterostomy had been done under the impression that the lesion was that of ulcer, carcinoma would have been left behind. Of the twelve resections in which histologic examination showed ulcer only, one died after thirteen months from perforative peritonitis; whether this was due to recurrence, to an overlooked second ulcer, or to a peptic ulcer of the jejunum could not be ascertained. Three patients have had now and then slight trouble but look well; one feels well after eight years and ten months and has recently gained in weight. The remaining seven patients are in excellent condition, have gained 38 to 40 pounds in weight, and are entirely healthy. Of the twelve upon whom gastroenterostomy was done on account of callous ulcer, not less than five died later of carcinoma. In two of the 12 a mass is still demonstrable; one patient can do only light work and suffers from hyperacidity, one has at times very severe gastric pain, one is much worse than before the operation, and only two are completely free from difficulty and to be considered healthy. After these experiences the author has no doubt that callous ulcer of the stomach is to be treated by resection.

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110 CASES OF SYPHILIS TREATED BY THE EHRLICH-HATA METHOD.

MICHAELIS (*Berliner klinische Wochenschrift*, Jahrgang 47, No. 37) reports in detail the treatment of 110 cases of syphilis with the Ehrlich-Hata preparation. In seven cases treated for the primary sore, the lesion disappeared in one to three weeks without any local treatment. One of these cases had already reached the stage of spontaneous disappearance, and in it twenty-four hours after the injection of 0.6 of a gramme of the remedy there appeared a rather circumscribed maculopapular eruption, which, however, had disappeared within another twenty-four hours. In the second group were 15 cases of secondary syphilis, previously untreated, showing skin exanthemata of different kinds, specific sore throat, and mucous patches. These cases all reacted exceptionally well, although the time required depended upon the difference in the anatomical character of the lesion. As a rule four to twelve days were required for the complete disappearance of the eruption. One case of acne eruption of the scalp, which was certainly specific in nature, was very resistant.

There were treated 22 cases of secondary syphilis which had recurred after mercurial treatment. In this group were four cases of severe brain syphilis, with papuloedema, three of which were very favorably influenced; the fourth had not been under observation long enough at the time of making the report to determine the result.

The most wonderful results were shown in 33 cases, with very severe syphilitic symptoms, which in spite of repeated and often long-continued treatment with mercury and iodides had not been freed of their symptoms. Amongst these were a number of cases which would have come to

a fatal end in a short time, others who had been unable to work for years, others with persistent ozena which had rendered them loathsome to associates, patients with widespread ulcerating gummata of the skin, nose, lips, and tongue, and those with severe nocturnal bone pains. Such cases were relieved in a few days after the administration of the remedy, although they had been afflicted for months or years and had failed to yield to the most persistent treatment. The only cases which remained uninfluenced were a few which suffered from old spinal and cerebral syphilis, and in which there was doubtless extensive degeneration of the nerve substance.

Of congenital syphilis 10 cases were treated, four being in sucklings and six of late manifestation. Of the sucklings, two were critically ill with severe visceral lues and died twenty-four hours after injection.

It is difficult to say whether or not the treatment hastened death, because the children were almost in a state of collapse when the remedy was administered. A third case suffering from severe skin lesions was free from symptoms six days after injection.

There were also treated 15 cases of tabes and eight of paralysis. In far advanced cases of this sort this preparation, as is to be expected, is of no use. In incipient cases the results are favorable, and injection in such cases is without harm. In several cases of tabes which were in the initial stage, although they showed marked ataxia, the ataxia became much less after the injection. In one case of paresis there was a marked remission, but as this at times occurs spontaneously, it cannot with certainty be attributed to the injection.

SPERMATOCELE.

HANUSA (*Beiträge zur klinischen Chirurgie*, Bd. 96, H. 2), having made a study of spermatocele in the clinic of Anschütz in Kiel, concludes as follows: Spermatocele originates from the vasa efferentia and from aberrant and non-pedunculated hydatids. The etiology in the great majority of cases depends upon trauma or inflammation, which produces a stenosis of one or more of the canaliculi of the testicle. The physiological narrowing of the canals acts only as an adjuvant by giving origin to hydatids in the production of spermatocele. We differentiate between extra-vaginal and intra-vaginal spermatocele, depending upon whether it is inside or outside the tunica vaginalis. The extra-vaginal form originates from the vasa efferentia and from aberrant vasa, and the intra-vaginal from non-pedunculated hydatids and those vasa efferentia which are in the head of the globus major and at the same time lie inside of the tunica vaginalis. In the cases observed by the author during the last ten years the extra-vaginal spermatocele is almost always multilocular. The diagnosis can almost always be made provided a coincident large hydrocele does not render palpation of the testicle impossible, and provided the hydrocele and spermatocele are not so closely adherent as to appear to be a single lesion. The treatment is always radical; injections of tincture of iodine and other aseptic inflammation-producing substances are of no avail. The same is true of aspiration, because the cyst is frequently observed to refill.

VACCINE IN THE TREATMENT OF GONORRHEAL PROCESSES.

SCHINDLER (*Berliner klinische Wochenschrift*, Jahrgang 47, No. 31) states that according to his experience with the use of gonococcal vaccines in the treatment of epididymitis and other complications of gonorrhea, as well as in gonorrheal arthritis, the vaccines have a definite future in the treatment of these conditions. He warns, however, against being too hopeful. In some of these cases there is mixed infection with streptococci and staphylococci and other organisms upon which the vaccine has no influence, and in some cases the tissues are so completely destroyed by the disease that there are not enough active cells left to produce immune bodies.

REVIEWS.

BIOLOGY, GENERAL AND MEDICAL. By Joseph McFarland, M.D. With 160 illustrations. W. B. Saunders Company, Philadelphia and London, 1910.

The pretentious title of Professor McFarland's book suggests an imposing volume devoted to and including an enormous array of hypothesis, theory, and fact. The preface informs us that the work claims to be a "Medical Biology," and from that view-point the author has produced a most meritorious publication, one that could with profit be read by every student of medicine and by all physicians to whom their profession means more than mere money-getting.

The matter treated comprises eighteen chapters: The Cosmical Relations of Living Matter; Origin of Life; Criteria of Life; Manifestations of Life; The Cell; Cell Division; Higher Organisms; Reproduction; Ontogenesis; Conformity to Type; Divergence; Structural Relationship; Blood Relationship; Parasitism; Infection and Immunity; Mutilation and Regeneration; Grafting; Senescence, Decadence, and Death.

The selection of facts presented, the epitomization, the sequence and space allotment may not meet universal approval, but seem adequate to the avowed purpose of the author. The book is for medical men, a fact never submerged, and the garnered data are so presented that their application to the science and art is continually in the foreground. Concerning heredity, the many pages of quoted matter could have been as lucidly presented in the author's words.

The illustrations are well selected; some, to which no reference is made in the text, might have been omitted; such, however, are infrequent, and probably the author has erred on the proper side. The chapters close with a few well-selected references to standard publications that should be most useful to students.

The volume is convenient in size and thoroughly presentable. The inclusion of sixteen pages of advertising matter is in accord with the prevailing commercialism of publishers and cannot be too strongly deprecated. In the absence of specific provisions in contracts authors are helpless. The ethics of publishers, if not their regard for the nicer proprieties, should stay the waste of ink.

In this age of overproduction among medical publications Professor McFarland's book may be welcomed as an exceptionally appropriate and highly valuable contribution. The growing demand for a fuller comprehension of biology as a science, especially as applied to medicine, should assure the volume speedy recognition and the success it deserves. W. M. L. C.

MODERN TREATMENT. In Contributions by Americans and Foreign Authorities. Edited by Hobart Amory Hare, M.D., assisted by H. R. M. Landis, M.D. In Two Volumes. Volume I, Illustrated. Lea & Febiger, Philadelphia and New York, 1910. Price $6.00, cloth.

The Preface of this book is perhaps the best statement for the reason of its existence, and therefore we append it:

"Every practitioner of medicine and surgery is deeply interested in the treatment of disease by medicines and by remedial measures which do not depend upon drugs for their effects. At no time in the history of the medical art has this interest been keener than it is to-day. Still face to face with many problems that called forth the best efforts of our predecessors, we are also called upon to meet additional conditions laid bare by the advances in medical science, all departments of which, even if remote from bedside practice, nevertheless have as their chief reason for existence the hope that our measures for the cure or alleviation of disease may be improved. Heretofore the means in our hands to this end consisted solely in drugs, in climate, in hydrotherapy and electrotherapy, but within the last fifteen or twenty years the wide and fruitful fields of therapeutics covered by serum therapy, and so-called vaccine therapy, have

been developed with a far greater approach to specific treatment than we ever possessed before. During the time that these advances have been made the pharmacologist, the chemist, and the pharmacist have enriched the materia medica list, with the result that remedies are better understood, new ones of inestimable value have been evolved, and all of them placed in our hands in a form in which they can be readily employed.

"The appearance of a work which places in the hands of the physician a competent summary of all these advances is therefore timely, and the specialist and general surgeon may well scan its pages not only for facts which are directly connected with their particular lines of work, but also because he who treats his patients skilfully, in so far as their general condition is concerned, is he who wins success.

"As one who has devoted many years to the study of therapeutics, it may not be out of place for the editor of these volumes to say a few words about the subject of therapeutics as it exists to-day, because it would seem that we are passing through a period in which, notwithstanding our wonderful advances, there still exist those who for lack of knowledge not rarely endeavor to ridicule the procedures which are often resorted to by competent and experienced men. Their tendency is to throw doubt upon any method which fails to stand before what they call known scientific facts, meaning by scientific facts laboratory results, and to ignore the fact that even if the explanation given as to the means by which a remedy does good is wrong, this in no way impairs the value of the statement that it does good. Such critics do good in that they push to the front the need of rational processes in treatment, and because they cause the practitioner to hesitate and think before he proceeds to the use of a remedy on hearsay or the advice of some one else. They often do harm in that they discourage those who are doing their best with the knowledge that scientific investigation and clinical experience has given them, and like the religious agnostic, they take away faith and give nothing in its place, although this faith is often founded upon years of careful bedside experience and hundreds of tests made under conditions the most severe.

"Brilliant as the advances have been, the well-balanced physician recognizes that the fields yet untilled are still filled with clinical conditions which are not susceptible as yet of scientific study. Yet there are men with laboratory training, but little or no bedside experience, who would have us refuse to trespass upon these fields because the means we have at hand are not based upon so-called scientific laboratory facts. As Sir Clifford Allbutt has well said, where would England be if her expansion had waited until cartographers mapped out new areas before pioneers were allowed to travel abroad. The whole progress of human knowledge is characterized by the advances of the pioneer and explorer, and after him has come the master scientist to place the results where they should be. As long as the realm of Medicine remains in parts unexplored there will remain grave conditions which must be met by empiricism, and as long as human beings in health and sickness vary individually as to their symptoms and reactive powers to disease and drugs there will be fields which must be dealt with without the accuracy given us by the laboratory worker. In other words, to quote Sir Clifford's simile again, in part, the physician at the bedside must ever be the leader or prime factor, in whose path must follow the scientific laboratory investigator, who will discover the reasons for the procedures which his practical colleague has found useful. Rare exceptions to this rule do not negative it, but emphasize its general truth. If, therefore, the knowledge of the laboratory investigator leads him to the belief that a given therapeutic procedure is irrational, it is for him, if he finds that procedure has well-nigh universal approval, not to marshal what facts he has to prove the clinician is wrong, but to bend his energies to discover the facts, as yet unknown to all of us, whereby the results are produced. In other words, it is for him to

prove how it does good, and not his function to try to prove that his colleague is in error. The cry to-day is for the conservative therapeutist, who, like Ehrlich, will build up our resources, and not for the iconoclast, who would take from us that which we have obtained by years of careful observation.

"The skill of the individual physician in adjusting his doses to the needs of a particular case, in choosing one drug instead of another of the same type for a particular action, is still the skill of the empiric and not the skill of the scientific laboratory investigator. If a given dose of a given remedy were suitable for a given ailment, there would be little need for the physician except as a diagnostician. It is the never-ceasing changes in all living persons and the different effects of disease in different individuals that gives the man with bedside experience his great value. The pharmacologist may lay down the fundamental processes, but the clinician must make the distinctions in their use which develop results which we desire. The variation from the normal in the body affected by disease may completely reverse the known effect of a drug upon a healthy organism. A host of illustrations might be cited, but a few suffice. Nearly all our knowledge of the so-called physiological effects of alcohol is that obtained by investigations of its effects on healthy animals or men. In the healthy organism the alcohol must be burnt up in addition to the ordinary processes of oxidation; whereas in the febrile patient it is not only more readily burnt up, but by its oxidation it protects the tissues of the patient. Another instance is the extraordinary impairment of the value of digitalis by the presence of fever. Still another is the immunity to chloroform possessed by parturient women. Other instances are the tolerance of iodides by syphilitics and of opium by those in pain.

"There can be no doubt that oftentimes remedies gain a reputation that they do not deserve chiefly because of coincidence of improvement with their administration, when in reality there is no relationship of cause and effect, or because the imagination of the physician, or of the patient, plays a rôle which in the case of the former should be controlled, but which in the patient is certainly advantageous. In either event a remedy may seem beneficial when really inert. But these errors are rarely harmful, and a great number of remedies have stood the test and have proved themselves of positive value, even if their effects are inexplicable. In many instances the advance of scientific knowledge has discovered how they do good many years after thousands of lives have been saved by their use, as with quinine, for example, or with digitalis, the so-called physiological action of which was at first thought to be quite the reverse of what we know it to be to-day. It is the duty of the physician, therefore, to resort to all measures proved useful by long experience unless it can be proved that they possess power for harm. At the same time that it is the duty of the pharmacologist to be a constructive agent, so it is also the duty of the bedside physician to be continually on the alert to improve his methods, to analyze his practice, to improve his mental processes, and to avoid giving a remedy by rule of thumb or because some one else has done so. He should be constantly on the lookout to discover why a remedy does good, and not be content with the result alone, since by this means he acts by reason and not by slavish example. To put it briefly, the attitude of the competent medical man of to-day must be that of clinical investigator, who welcomes every gain in knowledge as an additional aid in his efforts to do good. He must hold fast to that which is good, being careful that what he holds is worthy, and he must ever be controlled in his practice by the fact that he is treating a patient, not a disease, a patient whose powers of dealing with a malady are marvelous, with an organism that is to be directed, not driven or forced, into the right path. Last of all, let him be so careful of what he does that the maxim, 'Do no harm,' is never disregarded."

CLINICAL PATHOLOGY AND PRACTICE. With a Short Account of Vaccine Therapy. By Thomas J. Horder, B.S., M.D., F.R.C.P. Henry Frowde, Oxford University Press, London; Oxford University Press, New York.

We are told in the Preface that the aim of this book is to present the practitioner with a brief review of the scope and usefulness of modern pathological methods as applied to the diagnosis and treatment of disease. It is not intended as a laboratory text-book—indeed, care has been exercised to exclude descriptions of technique so far as the methods of the pathologist are concerned. Nor does it attempt to be a systematic account of clinical pathology. It is rather designed to aid the practitioner in the choice of cases that will repay pathological examination, and for this reason some inequalities in the dimensions of the different sections occur. After an introductory chapter the author deals with the collection of materials, with the subject of blood culture, the examination of the blood and sputum, and the examination of the various fluids obtained from the pleura, the lungs and the spinal canal. After this infectious conditions of the upper respiratory and urinary tracts are taken up, and then follow the methods to be employed in joint puncture for diagnostic purposes. A description is given of the methods employed for the examination of the feces and in the diagnosis of tuberculosis and its treatment by tuberculin. The fourteenth chapter deals with specific sera tests and their value in diagnosis. The fifteenth chapter discusses "fever without other physical signs," and the last two chapters vaccine therapy. There are a number of plates and black-and-white illustrations in the volume.

NEVER-TOLD TALES. By William J. Robinson, M.D. Third Edition. The Altrurians, New York, 1910. Price $1.00.

"Never-Told Tales" has been prepared with the idea of presenting facts, in non-medical language, which will aid in the crusade against the so-called social evil. In the preface the author states that he has no doubt that there are some good persons who will think that much that he has said had better be left untold, but, as he points out, the disaster which comes to men, women, and children through ignorance of gonorrhea and syphilis is of such a terrible nature that almost any means is justified in endeavoring to combat it. We have often referred in these pages to the difficulty which any one has in approaching this subject in a way which is not antagonistic to delicacy on the one hand and scientific accuracy on the other. Several chapters in this little book are written in the form of a story describing the conditions of women who were infected innocently, if such a term may be employed, and the results which followed. The book does not tell medical men much that they do not know, but will open the eyes of many of the laity to facts with which they undoubtedly should be familiar.

A TREATISE ON DISEASES OF THE SKIN. For the Use of Advanced Students and Practitioners. By Henry W. Stelwagon, M.D., Ph.D. Sixth Edition, Thoroughly Revised. Price $6.00 net. Copiously Illustrated. The W. B. Saunders Company, Philadelphia, 1910.

To have reached a sixth edition in a period of less than a decade is a distinction which comes to few medical books, and to fewer still if their text is confined to a consideration of what may be called a fairly limited specialty. When the first edition appeared Dr. Stelwagon's book at once took front rank among the works upon this subject throughout the world, be the language what it may, chiefly because he brought to the preparation of the text a long and wide clinical experience and a thorough knowledge of the literature of this subject at home and abroad. The result was the production of an exhaustive and complete discussion of dermatological subjects. The reader not only gains the views of Dr. Stelwagon, but also, in almost every instance, learns of the opinions of other eminent dermatologists. Copious references to the writings of other men in this country and abroad are found at the bottom of almost every page, and in this edition the author has taken pains to bring the whole subject thoroughly up to date.

He has also recognized what is so important on the part of every specialist, the bearing of general medicine upon diseases of the skin. He not only advises as to the treatment which should be carried out locally, but as to the methods which should be employed to correct systemic or diathetic conditions which, if not the cause, are at least important factors in the maintenance of skin lesions. The illustrations are unusually good; many of them are colored, and even those of skin lesions, which are in black and white, are sufficiently clear and defined to give an adequate conception of the conditions as they are seen in practice. We feel confident that in its sixth edition Stelwagon's Dermatology will obtain even greater popularity than its earlier editions.

DISEASES OF THE STOMACH AND UPPER ALIMENTARY TRACT. By Anthony Bassler, M.D. Copiously illustrated in colors and black and white from original monographs and drawings. The F. A. Davis Company, Philadelphia, 1910.

As soon as one takes up the present volume, which covers nearly 900 pages, he appreciates the fact that the author has set himself the task of preparing an exhaustive book upon this important subject. As the author says in his preface, it has not been his aim to divorce diseases of the stomach and upper alimentary tract from the field of internal medicine, but this field has now become so large that it necessitates the production of monographs to adequately cover certain sections of it.

After opening chapters dealing with the topographical and histological anatomy of the upper alimentary tract beginning at the teeth and lips, he proceeds to a study of the physiology and chemistry of digestion, to methods which should be followed in developing the patient's history, the external examination of the patient, and then passes to the chemical examination of the stomach contents. Passing on from these subjects, which are carefully and thoroughly considered, Dr. Bassler takes up the methods of examining the feces in gastric diseases, the information which can be obtained as to gastric disorders from examining the urine, and in the tenth chapter begins to consider the therapeutics of gastric disorders, including both drugs and remedial measures other than drugs. In the fifteenth and sixteenth chapters the indications for surgical treatment are discussed. After this the various organic lesions of the stomach are covered in about eighty pages, and then the functional disorders, including the disorders of secretion and motion. The final chapters deal with gastroenteric neuroses and general concluding considerations.

The large type and wide spacing employed by the publisher makes the text easy to read, but produces a large volume.

From the beginning to the end of the book it is evident that the writer is discussing a subject with which he is quite familiar from the standpoint of the active practitioner. The illustrations are adequate and good, and the book may be considered a creditable addition to the subject of internal medicine as it is practiced and taught in the United States.

THE PHYSICIAN'S VISITING LIST FOR 1911. P. Blakiston's Son & Company, Philadelphia, 1911.

This Visiting List, as we pointed out in previous years, is the oldest one presented to physicians. It has maintained its popularity for sixty years. It appears in several forms: The one for 25 patients per week; and others ranging up to 100 patients in two columns at $2.50; perpetual and monthly editions are also issued. The book contains a large amount of valuable information in brief notes at its opening, and has all the points which have made its earlier editions popular.

GENERAL CARE OF THE PATIENT. A Book for Nurses. By Alfred T. Hawes, A.M., M.D. Illustrated. P. Blakiston's Son & Company, Philadelphia, 1911. Price $1.00.

As indicated in the title this little volume is intended for the nurse and not for the physician. The first three chapters deal with medical and surgical nursing; Chapter IV with the after-care of the patient; Chapters V and VI with maternity nursing. The book is by no means exhaustive, but

contains a large amount of practical information and specific instructions to the nurse as to how she is to prepare various solutions, make the patient ready for the physician and surgeon, and adequately care for the parturient woman and her offspring.

OBSTETRICAL NURSING. For Nurses and Students. By Henry E. Tuley, A.B., M.D. J. P. Morton & Company, Louisville, Ky., 1910. Price $1.50. Illustrated.

We have not been able to find very much that is original in this little book, which describes the female organs of generation and the mammary glands, and then discusses, very briefly, some points in embryology. It proceeds to a discussion of the methods which should be employed by the obstetrical nurse and, to a large extent, by the obstetrical physician. Almost every page contains an illustration which serves to make the text more easy of understanding. There is also a chapter upon infant feeding and upon the common obstetrical procedures in difficult labor. The book closes with a glossary or brief dictionary of obstetrical terms which the obstetrical nurse should be familiar with.

INTERNATIONAL CLINICS. A Quarterly of Illustrated Clinical Lectures and Articles. Vol. III. Edited by Henry W. Cattell, A.M., M.D. The J. B. Lippincott Company, Philadelphia and London, 1910.

We have so often noted the appearance of previous issues of International Clinics that it is not necessary to describe the character of this publication. The present issue contains numerous articles upon diagnosis and treatment, the teeth and oral cavity, gynecology, medicine, surgery, and some miscellaneous articles dealing with what vivisection has done for medicine, the physician's part in the war against venereal disease, prophylaxis as a public asset, gastro-intestinal hormones and their significance. Amongst other articles of interest is one upon the treatment of noma and pneumonia in children, the treatment of advanced and acute cases of tuberculosis of the lungs, observations on the salt-free diet in dropsy, causes and treatment of persistent hemorrhage from the uterus, surgical interference in pancreatitis and tuberculous abscess of the hip.

INTERNATIONAL CLINICS. Edited by Henry W. Cattell, A.M., M.D. The J. B. Lippincott Company, Philadelphia and London, 1910. Volume IV: Twentieth Series.

The present issue of International Clinics contains, as its opening article, a description of Ehrlich's "606" by Henry W. Cattell, followed by a brief note upon the treatment of syphilitic iritis by Dr. G. E. de Schweinitz. These are perhaps the most important contributions to the volume, although one upon functional tests of cardiac efficiency by Arthur D. Hirschfelder is of interest and of considerable practical value. Dorrance and Ginsberg contribute a paper upon transfusion of blood by the veins, and Tyrrell Gray writes upon the technique, aims, and limitations of spinal anesthesia. There are a large number of other articles in other departments of medicine which are of very considerable interest to the general practitioner. Taking it all together this is one of the best volumes of International Clinics that has ever appeared.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. Edited by H. A. Hare, M.D., Assisted by L. F. Appleman, M.D. Volume IV, December, 1910.

The present issue of Progressive Medicine contains articles giving a summary of the advances during the past twelve months in diseases of the digestive tract and allied organs by R. L. Lavenson, and diseases of the kidneys by Dr. J. Rose Bradford, of London; Surgery of the Extremities, Shock, Anesthesia, Infections, Fractures, Dislocations, and Tumors by Joseph C. Bloodgood; Genito-Urinary Diseases by Dr. William T. Belfield. The volume closes with an article covering about seventy pages entitled "A Therapeutic Referendum," by Dr. H. R. M. Landis, who gives a competent summary of therapeusis by drugs as described in medical journals in this country and abroad for the year 1910.

THE PRACTICAL MEDICINE SERIES. Edited by Gustavus P. Head, M.D., and Charles L. Mix, A.M., M.D. Volume V: Obstetrics. Edited by Joseph B. De Lee, A.M., M.D., and Herbert M. Stowe, M.D. Series 1910. The Year Book Publishers, Chicago.

This excellent manual is made up of a very wise selection of the literature of the year bearing upon advanced teaching in obstetrics. Among the interesting topics taken up are Early Sero-diagnosis of Pregnancy, the Functions of the Corpus Luteum, Pulmonary Edema and Puerperium Psychoses during Pregnancy and Puerperium, Spirochæta Pallida in Embryos and Fetuses, Jaundice in the New-born.

The abstracting is admirably done. Although the book cannot be considered a complete résumé of obstetrics for the year, it contains reviews of nearly all the most valuable contributions.

THE PRACTICAL MEDICINE SERIES. Volume VI. General Medicine. Edited by Frank Billings, M.D., and J. H. Salisbury, A.M., M.D. Series 1910. The Year Book Publishers, Chicago, 1910. Price $1.50.

This little book is designed to give a summary of the advances made in medicine, in distinction from surgery and the specialties, during the preceding twelve months, and contains articles on typhoid fever, malaria, cerebrospinal meningitis, and most of the acute infections. It also discusses diseases of the alimentary tract from the standpoint of physiology, diagnosis, and treatment. The work is well done, as is all work done by the men whose names appear as editors.

THE PRACTICAL MEDICINE SERIES. Volume VII: Pediatrics, Edited by Isaac A. Abt, M.D., with the Collaboration of May Michael, M.D. Orthopedic Surgery, Edited by John Ridlon, A.M., M.D. Series 1910. The Year Book Publishers, Chicago.

The seventh volume of this series is devoted to Diseases of the New-born, Dietetics, Diseases of Nutrition, Infectious Diseases, Orthopedic Surgery, and a series of miscellaneous affections, among which are found infantile paralysis, spastic paraplegia, Volkmann's contracture and experimental arthritis. It exhibits the customary excellent résumé of current literature, with a just conception of the needs of the general practitioner, nor is it without value to the specialist since the subject-matter has been wisely chosen. Except to him who takes a large number of medical journals, these annuals are invaluable as offering means of keeping abreast with the writing of the day.

THE PRACTICAL MEDICINE SERIES. Volume VIII: Materia Medica and Therapeutics, Preventive Medicine, Climatology. Edited by George F. Butler, M.D., H. B. Favill, M.D., and Norman Bridge, M.D. The Year Book Publishers, Chicago, 1910. Price $1.50.

Practically all the infectious diseases are considered in the chapters devoted to Preventive Medicine so far as prophylaxis is concerned. The volume opens with Materia Medica and Therapeutics and with the general statement that no exceptional advance in Therapeutics has been made during the past year save Ehrlich's production of "606." The subjects are arranged alphabetically, and a competent review of the material has been prepared. This department takes up the first 240 pages of the book; Preventive Medicine covers 78 pages; Climatology covers 36 pages.

BACTERIOLOGY AND SURGICAL TECHNIQUE FOR NURSES. By Emily M. A. Stoney. Third Edition, Thoroughly Revised and Enlarged by Frederic Richardson Griffith, M.D. (Univ. of Penn.). Illustrated. W. B. Saunders Company, Philadelphia and London, 1910.

That a third edition of this text-book for nurses is required is sufficient evidence as to its value. Griffith in his preface states that the chief concern in producing this work has been to use plain and simple language to teach the surgical nurse to be clean, reliable, and successful in her work. Some well-tried recipes have been added and special operations have been considerd in some detail. There is a glossary in which is explained the meaning of the words used in the text.

The book opens with the History of Bacteriology, and a discussion of bacteria as the cause of disease. The theory of antitoxins is given briefly. Antiseptics, Disinfectants, and Deodorants are considered in some detail. Under Surgical Technique is

included Bandaging and Dressing, Care of the Operating Room, Method of Sterilization, Care of Instruments, and a list of instruments for various operations.

There is a brief chapter upon Anesthesia. The technique of saline infusions, irrigations, etc., is given at length. Indeed, the nurse will find in this book all the directions essential both for the preparation for operations and the after-care of the patient.

The book ends with a short chapter devoted to the personal conduct of the nurse's life. It is well adapted to the end for which it was written.

PRACTICAL POINTS IN NURSING FOR NURSES IN PRIVATE PRACTICE. With an Appendix Containing Rules for Feeding the Sick. By Emily M. A. Stoney. Fourth Edition, Thoroughly Revised. Illustrated. W. B. Saunders Company, Philadelphia and London, 1910.

The fourth edition of Miss Stoney's excellent work, written especially for those engaged in private nursing, represents the revisions, alterations, and added illustrations which have been found needful to keep abreast with modern practices in the best conducted hospitals. As is proper the first chapter is devoted to the nurse and deals with her qualifications, duties, dress and personal habits, and the equipment of her bag, together with the directions for keeping records.

The second chapter is devoted to the sick-room and has to do with its preparation, management of the bed, and general hygiene.

The third chapter is devoted to the patient. Under the heading Relief of Functional Disturbances are included enemas, rectal feeding, douches, catheterization, washing out the bladder, washing out the stomach, lavage, nasal feeding, and test meals.

Further consideration is devoted to nursing obstetrical, gynecological, and surgical cases, to accidents and emergencies, to nursing special medical cases and to nursing of sick children, and to physiology and anatomy.

There is an excellent appendix containing rules for feeding the sick; recipes for invalid foods and beverages; weights and measures; dose list; and a full glossary of medical terms and nursing treatment.

The knowledge essential to a nurse for the proper practice of her profession is admirably concentrated in this volume.

CORRESPONDENCE.

LONDON LETTER.

BY J. CHARLTON BRISCOE, M.D.

The season of Christmas rarely passes without the occurrence of public disasters and accidents on a large scale, but the past season has had more than its fair share of misadventure. The terrible colliery explosion in Wales caused the loss of over three hundred lives; the Scotch express was derailed on Christmas eve, and though the actual loss of life was not large, circumstances combined to make a harrowing scene, for the accident took place at the top of a lonely moor, in the pitch-dark, with torrents of rain falling. The train caught fire and several people were burnt to death, whom it was impossible to extricate from the débris. London has been kept in a state of excitement by the anarchist outrages in the East End. First came the shooting of three policemen in Houndsditch by armed aliens who were endeavoring to burgle a jeweler's shop, and then the already historic battle of Stepney, when Londoners had the unusual sight of Guardsmen and artillery in action. The investigations now being carried on have shown that the affair is more serious than appeared at first sight, and that it is not merely a case of armed burglary, for the criminals belonged to a dangerous gang of foreign anarchists, and the attempted robbery was probably only a side

issue to obtain funds for their other schemes. The outrages have raised afresh, in an acute form, the whole question of alien immigration, for the present Aliens Act has proved totally inadequate in working, and any alien with a little money in his pocket can get into the country with the greatest ease. The police have been much hampered in their investigations by the bewilderingly large number of aliases employed by the criminals, so that the question of identity has proved a very difficult one. If this country is to remain an asylum for all the undesirables of other nations, we surely ought to put in force a system of compulsory registration, which would not be oppressive to law-abiding aliens.

The Council of King Edward's Hospital Fund for London has just issued its list of awards to the hospitals, consumption sanatoria, and convalescent homes for the year 1910. The total sum distributed is £155,000, of which £5000 goes to convalescent homes and consumption sanatoria. It may be recalled that in last month's letter mention was made of St. George's Hospital, where the financial relations between the hospital and the medical school had been criticized on account of a certain payment by the hospital to the school. On investigation it appears that the payment was made on account of definite work done, chiefly pathological and bacteriological examinations, in connection with the actual treatment of patients. The payment was therefore justified by the conditions of the fund. The Distribution Committee, however, came to the conclusion that the apportionment of the expenses of the laboratories as between the treatment of patients and medical education required investigation, and they recommended that the grant this year should be retained until the Fund is satisfied that the payment made to the school by the hospital bears a proper proportion to such definite work done for the hospital. The Executive Committee has also had under consideration the question of hospital contracts. It has been suggested that it would be an advantage for London hospitals to enter into joint contracts and thus secure the advantages of purchasing on a large scale. As a scheme had already been started in New York on these lines the committee thought it well to inquire into the subject and ascertain if the Fund could usefully take any action in the matter. A subcommittee was therefore appointed to investigate the question, and a report has been issued which contains a careful statement of the possible advantages and difficulties of coöperative purchase by groups of independent voluntary hospitals. Nearly 100 hospitals now present statistical reports of their expenses to the Fund, and the data so obtained have formed the basis of a schedule of working expenses drawn up on the most economical lines. This schedule enables the Council of the Fund to draw the attention of the hospitals concerned to cases where the cost per bed or per patient is much above the average.

Guy's Hospital was concerned in a curious point of law recently. The authorities of the hospital were summoned for "having used armorial bearings without having a license." The hospital replied that the armorial bearings had been granted to them in the year 1725, within a year of the foundation, and claimed that the exemption implied that "persons by right of office shall wear or use the arms of any corporation," and that therefore the governors were justified in displaying the arms on the certificates given to nurses. The magistrate, however, decided that the governors were not persons to whom the exemption could apply, but as this had been allowed to go on for such a long time only a nominal fine was imposed.

The Divorce Commission has at length finished hearing all the evidence offered, and the members will now retire to consider that evidence and to prepare a report. It is not expected that the report will be issued until the middle of next summer. Two interesting witnesses were heard on the last day, Mr. W. T. Stead and Mr. Maurice Hewlett. Mr. Stead contended that the divorce law should not be remod-

eled until women had a share in electing the legislature, and that all divorce cases should be tried before mixed juries of men and women. He thought that, in order to discourage divorce, there should be no interference with the liberty of the press to report at its discretion the proceedings of the Divorce Court; that whatever evils might result from the publication of evidence, they were as dust compared with the evils that would result from restriction. The witness declared that the Church had ceased to exist as a teacher of morals, and that the press was the last remaining pillory by which it was possible to place some restraint upon the passions of men. Mr. Hewlett suggested that the judge ought to have the benefit of lay assessors, who should always be two—one man and one woman. He thought that the judgment of impartial, educated persons of weight and experience upon such intimate matters as love and temperament were essential to a good and equitable divorce court. The commission began to hear evidence in February, 1910, since when it has held fifty-five sittings, averaging about six hours each. The total number of witnesses called has been 248, and among them have been clergymen, judges, magistrates, barristers, solicitors, newspaper editors, prison officials, registrars, and lunacy commissioners.

The new drug invented by Ehrlich as a cure for syphilis is now on the market at 10*s.* 6*d.* a tube, containing enough for a single injection. This will be a boon to the profession at large and to the public. Prior to a few weeks ago it was only possible to obtain this drug from a few of those who were known to the chief men abroad. It has now had a thorough test abroad and comparatively few accidents have occurred. The method of intravenous injection is being recommended over here, and certainly the immediate results are giving great satisfaction both to the profession and to the patients themselves. It is too early yet to conclude that no ill effects will follow, but it will be most disappointing should this be the case and the use of "606" has to be discontinued. At the Christmas entertainment at one of the hospitals this past season, where the students were giving a kind of modified music hall entertainment, one of the turns was numbered "606," but only a few of the audience understood the allusion.

"OSTEOPATHY: DOES IT OFFER ANYTHING NEW?"

To the Editor of the THERAPEUTIC GAZETTE.

SIR: I have read with great interest Dr. N. S. Yawger's article with the above title that appeared in the THERAPEUTIC GAZETTE of July, 1910, and quite indorse what he says on the subject of osteopathy.

I would like to point out, however, that no hospital has ever been founded in London or elsewhere by Dr. Arvid Kellgren, the brother of the great Henrik Kellgren. The only institution of the kind is the small Kellgren Hospital founded in December, 1909, in London, the original attendant physicians being Drs. Harvey Kellgren, E. Kellgren, A. Kellgren-Cyriax, G. Edholm, and the writer of this letter. The number of physicians has since then been somewhat augmented.

Dr. Yawger will find a much more extensive account of Henrik Kellgren's nerve treatment than has been given by Dr. Arvid Kellgren, in the writer's "The Elements of Kellgren's Manual Treatment," London, 1903, 500 pp., and another larger work devoted specially to the manual nerve treatment is in process of compilation by the writer, who begs to subscribe himself,

Yours very sincerely,

EDGAR F. CYRIAX, M.D.

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